



PROGRESSIVE AGRICULTURE BRANCH.

GEOLOGICAL AND NATURAL HISTORY SURVEY OF CANADA.

ALFRED R. C. SELWYN, C.M.G., LL.D., F.R.S., DIRECTOR.

4481

CATALOGUE
OF
CANADIAN PLANTS.

PART VI.—MUSCI.

BY

JOHN MACOUN, M.A., F.L.S., F.R.S.C.,

Naturalist to the Geological and Natural History Survey of Canada.

AND

PROFESSOR N. C. KINDBERG, Ph.D.,

State College, Linköping, Sweden.



PRINTED FOR THE GOVERNMENT OF CANADA.

WILLIAM FOSTER BROWN & Co., PUBLISHERS,
MONTREAL.

1892.

PREFACE.

From the spring of 1861 until the present, I have been collecting Canadian Musci, and in that time have traversed the continent many times. From 1861-1868, I collected in the central counties of Ontario, in 1869 under the auspices of the Natural History Society of Montreal, I spent nearly two months on the north and west shores of Lake Superior. In 1872, I collected from Lake Superior, westward to the Lake of the Woods, thence to Edmonton on the Saskatchewan, thence westward to Peace River in lat. 56°, and from there to Vancouver Island traversing nearly the whole length of British Columbia. The spring of 1875 was spent on Vancouver Island, and the summer occupied in collecting in British Columbia and along the whole length of the Peace River. The summers of 1879-80-81 were spent in Manitoba and the prairie region where many peculiar species were gathered. In 1882-83, I collected in Nova Scotia, Cape Breton, Anticosti and the Gaspé peninsula. The summer of 1884 at Lake Nepigon and the north shore of Lake Superior. The next summer (1885) collections were made in the Rocky and Selkirk Mountains on the line of the Canadian Pacific Railway. Vancouver Island was visited again in 1887, Prince Edward Island, in 1888 and the summers of 1889-90 and 1891 were spent making exhaustive collections between the Pacific coast and the eastern base of the Rocky Mountains.

Important and interesting additions have also been made to the collections by the undermentioned gentlemen, including some new species:—

Dr. Robert Bell, of the Geological Survey Department, from Hudson Strait and Bay; J. M. Macoun from the shores of Lake Winnipeg, the islands in Behring Sea, the coast of Alaska and British Columbia; Mr. John Moser, of Caanan Forks, Queen's County, New Brunswick, from New Brunswick; Mr. J. Dearness from around London, Ontario; Rev. Charles A. Waghorne, of New Harbor, Newfoundland, from Newfoundland and Labrador.

From the foregoing it will be seen that the material for the present work has been accumulating for many years. In 1861 I commenced a correspondence with Sullivant, who was then working on his *Icones Muscorum*. After some years Mr. Coe F. Austin took up the

subject, but failing health and an early death brought his work to a close. Meanwhile Prof. T. P. James rendered me valuable assistance and examined and determined many difficult species.

On the publication of Lesquereux & James' Manual of North American Mosses in 1884, I thought my difficulties were over, but with the increase of knowledge came the increased difficulty of separating the closely related species of Eastern Canada from those of the Rocky Mountains and Pacific Coast. It soon became evident that although this manual might be exhaustive for the United States, it was far from being so for Canada.

Up to 1885 I had, with the assistance of books and the above named authorities, catalogued a large number of species, and it was then decided to distribute sets of one hundred named Canadian mosses to test the accuracy of these determinations.

In 1857 I began to correspond with Professor Nils Conrad Kindberg, Ph. D., the distinguished bryologist of the State College, Linköping, Sweden, and we at once saw the value of the discoveries that were being made. With the greatest zest Dr. Kindberg entered into the examination of the large series of specimens we had collected, and the determinations, descriptions and notes on the species are his with very few exceptions. Dr. Carl Mueller, of Halle, the first authority among living bryologists, assisted Dr. Kindberg and reference to his collection, the richest in the world, greatly facilitated the work. Dr. Venturi has examined many specimens of the genus *Orthotrichum*, while Dr. Warnstorf, of Neuruppin, Germany, has examined all the specimens of *Sphagnum*, and it is from his determinations that the species have been named, compiled and arranged. Messrs. Renaud and Cardot have also given valuable assistance.

A duplicate of every specimen sent to Dr. Kindberg has been mounted and placed in the herbarium of this department so that almost every species, from each locality mentioned in the pages of the catalogue, is represented in its Museum.

The only lists published without the specimens referred to having been examined are those of Mr. C. N. St. Cyr, Department of Public Instruction, Quebec, Professor Alexander McKay, M.A., Dalhousie College, Halifax, Nova Scotia, and that of Professor James Fowler, D.D., Queen's College, Kingston, Ont.

In compiling the catalogue, Miquelon Island, Newfoundland, Greenland and Alaska have been included so as to embrace all the known northern species, and I trust the present catalogue may be useful for reference and stimulate others to follow up the foundation now laid, by additional works which will include the latest discoveries.

PREFACE.

v

In conclusion, I wish to thank the collectors mentioned for their industry and material assistance. Especial thanks are due Dr. Kindberg for his gratuitous and unremitting labors in examining between 5,000 and 6,000 specimens from 1887 to the present time. Indeed without his assistance the work could never have been done so thoroughly and completely.

JOHN MACOUN.

Ottawa, June 16th, 1892.

ERRATA.

- Page 6—For "Sphagnum Hendocinum" read "Sphagnum Mendocinum."
" 6—For "Sphagnum teres var. squarrosulum" read "Sphagnum teres var.
squarrulosum."
" 62—For "Grimma" read "Grimmia."
" 63—For "Grimmia rivularis" read "Grimmia rivularis."
" 196—For "*Hypnum velutinum*" read "*Hypnum velutinum*."

MUSCI.

ORDER I. SPHAGNACEÆ. PEAT MOSSES.

SPHAGNUM.

- (1.) **S. fimbriatum**, Wils., var. **tenue**, Gravet ; Coult. Bot. Gaz. XV. 128.

S. fimbriatum, Wils. ; Lesq. & James, Mosses of N. America, 14.

Miquelon Island. (*Delàmare.*) Bogs and swamps, Hampton, Kent Co., N.B. (*Fowler's Cat.*) Peat bog, Beesie River, Anticosti; Otter Pond, and at Tignish, Prince Edward Island ; in a bog at the Race-course, Ottawa, Ont. (*Macoun.*)

Var. **arcticum**, C. Jensen.

Greenland ; Mission Station, New Herrenhut. (*Spindler.*) Cape Chudleigh, Hudson Strait. (*R. Bell.*) Grand Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (2.) **S. Cirkenshonii**, Russ. Beit. p. 46. (1865) ; Coult. Bot. Gaz. XV. 128.

S. strictum, Lindb. ; Lesq. & James, Mosses of N. America, 13 ; Canadian Musci, No. 6.

Miquelon Island. (*Delàmare.*) Champlain and Levis, Que. (*St. Cyr.*) Peat bog, Kingston, Kent Co., N.B. (*Fowler's Cat.*) Egg Mountain, Antigonish Co., N.S. (*J. Robert.*) Pictou Co., N.S. (*McKay.*) Peat bog near Truro, N.S. ; wet woods rear of Beechwood, Ottawa ; swamp at the base of the Oak Hills, Hastings Co., Ont. ; on the portage path, four miles east of Kakabeka Falls, west of Lake Superior ; peat

bog at Revelstoke, B.C. (*Macoun.*) Peat bog, Newboro, near Kingston, Ont. (*Prof. Lawson.*) Chicken Bay and Hopewell Bay, Newfoundland. (*Rev. A. Waghorne.*)

Var. **hygrophillum**, Warnst. (MS.)

In boggy woods north of Beechwood, Ottawa, Ont. (*Macoun.*) In bogs along Burnaby Lake near Hastings, B.C. (*J. M. Macoun.*)

(3.) **S. Russowii**, Warnst.; Coult. Bot. Gaz. XV. 130.

In bogs at Blaketown, Cooper's Road and Green Harbour, Newfoundland. (*Rev. A. Waghorne.*)

Var. **pæcillum**, Warnst.; Coult. Bot. Gaz. XV. 132.

Peat bogs, New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

Var. **rhodochroum**, Russ.; Coult. Bot. Gaz. XV. 132.

Peat bogs near Fredericton, N.B. (*Fowler.*)

Var. **Girgensohnoides**, Russ.; Coult. Bot. Gaz. XV. 132.

In a small peat bog in Roger's Pass, Selkirk Mountains, B.C.; alt. 4,500 feet. (*Macoun.*)

(4.) **S. fuscum**, (Schpr.) von Klinggraeff; Coult. Bot. Gaz. XV. 133.

Miquelon Island. (*Delamare.*) Grand Lake, N.B. (*Fowler.*) Peat bogs, Newfoundland. (*Rev. A. Waghorne.*) Common in Hastings Co., Ont. (*Macoun.*)

Var. **fuscescens**, Warnst.; Coult. Bot. Gaz. XV. 135.

S. acutifolium, var. *fuscum*, Lesq. & James, in part.

Shelldrake River, Que. (*St. Cyr.*) Swamps, Bass River, Kent Co., N.B. (*Fowler.*) Quite common in peat bogs throughout northern Canada. Otter Pond, Prince Edward Island; Mer Bleue, and at the Race-course near Ottawa; peat swamps Hastings Co., Ont.; in a swamp near the Pic Lake Superior; in bogs at Stephen and Hector, Rocky Mountains; also in a bog at Langford Lake, Goldstream, Vancouver Island. (*Macoun.*)

Var. **pallescent**, Warnst. (MS.)*S. acutifolium*, var. *fuscum*, Canadian Musci, No. 2.

Common in Mer Bleue near Ottawa; frequent in peat bogs, Hastings Co., Ont.; bogs, north of Edmonton, N.W.T.; peat bogs at Revelstoke and Craigellachie, Eagle Pass, B. C. (*Macoun*.) In a bog, summit of Mount Queest, B.C. Alt. 7,000 feet. (*J. M. Macoun*.)

- (5.) **S. tenellum**, (Schpr.) von Klinggræff; Coult. Bot. Gaz. XV. 135.

Miquelon Island. (*Delamare*.)

Var. **rubellum**, (Wils. as species.) Warnst.; Coult. Bot. Gaz. XV. 137.

S. rubellum, Wils.; Lesq. & James, Mosses of N. America, 13; Canadian Musci, No. 5.

Not uncommon in Nova Scotia. (*McKay*.) Peat bogs, Kingston, Kent Co., N.B. (*Fowler's Cat*.) In peat bogs at Belledune, N.B. (*Chalmers*.) Peat bog, Salt Lake, Anticosti; Otter Pond, Prince Edward Island; very abundant in the Mer Bleue near Ottawa; peat bogs, North Hastings, Ont.; bogs, Portage La Loche, N.W.T., lat. 57°. (*Macoun*.)

Var. **violaceum**, Warnst. (MS.)

In peat bog at Fredericton, N.B. (*Fowler*.)

- (6.) **S. Warnstorffii**, Russ.; Coult. Bot. Gaz. XV. 138.

In small bogs by the borders of ponds Gaspé Co., Q. (*Macoun*.)

- (7.) **S. quinquefarium**, (Braithw.) Warnst.; Coult. Bot. Gaz. XV., 189.

Peat bog, Mount Albert, Gaspé Co., Q., alt. 4,000 feet; in bogs, Port Dover, Lake Erie, Ont. (*Macoun*.)

- (8.) **S. acutifolium**, (Ehrh. in part.) Russ. & Warnst.; Coult. Bot. Gaz., XV., 191; Canadian Musci, No. 1.

Very abundant in all peat bogs throughout Canada. Miquelon Island. (*Delamare*.) Peat bog, Kent Co., N.B. (*Fowler*.) Common in Nova Scotia. (*McKay*.) Otter Pond, Prince Edward Island; Straits of Canso, and at Truro, N.S.; River Ste. Anne des Monts, Gaspé Co., Q.;

peat bogs, Mer Bleue and at the Race-course, Ottawa; Jupiter River and Salt Lake, Anticosti; common in the Rocky and Selkirk mountains, and westward to Vancouver Island. (*Macoun.*) Mountains east of Adams Lake, B.C., alt. 5,600 feet. (*Dawson.*) Bogs along the River Rouge, Argenteuil Co., Q. (*D'Urban.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*) In swamps, near London, Ont. (*J. Dearnass.*)

Var. **versicolor**, Warnst.; Coult. Bot. Gaz. XV. 193; Canadian Musci, No. 3.

New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Bass River, Kent Co., N.B. (*Fowler.*) Peat bog, Mer Bleue and at the Race-course, near Ottawa; swamps, Oak Hills, Hastings Co., Ont.; in marshes, Porcupine Mountains, Man.; bogs near Lesser Slave Lake, N.W.T.; Peat bogs, Stephen and Hector, Rocky Mountains. (*Macoun.*)

Var. **pallescent**, Warnst.; Coult. Bot. Gaz. XV. 193; Canadian Musci, No. 4.

In the hollows of granite rocks on a small island off the north-east coast of Lake Superior, nearly opposite the lower end of Michipicoten Island; peat bog, Mer Bleu, near Ottawa. (*Macoun.*)

Var. **rubrum**, Warnst. (MS.)

Peat bogs, Lake Nepigon, Ont. (*Macoun.*) Cooper's Road, New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

Var. **purpurascens**, Warnst.

In a peat bog, Jupiter River, Anticosti, Que. (*Macoun.*)

(9.) **S. subnitens**, Russ. & Warnst. var. **flavicomans**, Card.; Coult. Bot. Gaz., XV., 196.

Miquelon Island. (*Delàmare.*)

(10.) **S. Lindbergii**, Schpr.; Coult. Bot. Gaz., XV., 217.

Canada, Newfoundland and Greenland. (*Warnstorf.*) Miquelon Island. (*Delàmare.*)

(11.) **S. riparium**, Aongstr.; Coult. Bot. Gaz., XV., 217.

Greenland, New Herrenhut. (*Spindler.*) Kotzebue Sound, Alaska. (*Seeman.*) In boggy spots in Roger's Pass, Selkirk Mountains, B. C.; alt. 4,500 feet. (*Macoun.*)

- (12.) **S. recurvum**, (P.B.) Russ. & Warnst. var. **pulchrum**, Lindb. ; Coult. Bot. Gaz., XV., 218.

Miquelon Island. (*Delàmare.*) Wet woods along the Mere Bleu, near Ottawa ; shore of Gull Lake, Frontenac Co., Ont. ; bogs Portage La Loche, lat. 57° and near Lesser Slave Lake, N.W.T. (*Macoun.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

Var. **mucronatum**, Russ. ; Coult. Bot. Gaz. XV. 218.

In a peat bog at Brackley Point, Prince Edward Island ; wet woods along the Mer Bleue, near Ottawa ; in peat bogs, Peterboro Co., Ont. (*Macoun.*) Grand Lake, N.B. (*Fowler.*) In swamps, Canaan Forks, N.B. (*J. Moser.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

Var. **amblyphyllum**, Russ. ; Coult. Bot. Gaz. XV. 218 ; Canadian Musci, No. 7.

Bass River, Kent Co. ; in ponds at Richibucto, N.B. (*Fowler.*) Abundant in Otter Pond, Prince Edward Island ; peat bog, Kingston, N.S. ; borders of ponds, Mer Bleue, near Ottawa ; peat swamps, Hastings Co., Ont. (*Macoun.*)

Var. **parvifolium**, (Sendt.) Warnst. ; Coult. Bot. Gaz. XV. 219.

Peat bogs, Hastings Co., Ont. ; peat bog, Mer Bleue, near Ottawa ; Langford Lake, Vancouver Island. (*Macoun.*) In bogs, New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (13.) **S. cuspidatum**, (Ehrh.) Russ. & Warnst. var. **Torreyanum**, Sulliv. ; Coult. Bot. Gaz., XV., 220.

Miquelon Island. (*Delàmare.*)

Var. **Miquelonense**, Ren. & Card. ; Coult. Bot. Gaz. XV. 220.

Miquelon Island. (*Delàmare.*)

Var. **falcatum**, Russ. ; Coult. Bot. Gaz. XV. 221.

Miquelon Island. (*Delàmare.*)

Var. **submersum**, Schpr. ; Coult. Bot. Gaz. XV. 221.

In Otter Pond, Prince Edward Island. (*Macoun.*)

Var. **plumosum**, Bryol. Germ. ; Coult. Bot. Gaz. XV. 221.

In peat bogs, Salt Lake, Anticosti, Que. (*Macoun.*)

- (14.) **S. Hendocinum**, Sull. & Lesq.; Coult. Bot. Gaz., XV., 221 ; Canadian Musci, No. 8.

In a peat bog, at Salt Lake, Anticosti ; in a bog at Wellington Mine, Departure Bay, Nanaimo, Vancouver Island. (*Macoun.*)

- (15.) **S. squarrosus**, Pers. ; Coult. Bot. Gaz. XV. 223.

Abundant in wet places in woods in Hastings and Northumberland Co's., Ont. (*Macoun.*)

Var. **spectabile**, Russ. ; Coult. Bot. Gaz., XV., 223 ; Canadian Musci, No. 10.

Mountain bogs, Roger's Pass, Selkirk Mountains, B. C. ; Albert Cañon, Illicillewaet River, B.C. ; peat bogs, Hastings Co., Ont. (*Macoun.*) Grand Lake, N.B. (*Fowler.*)

Var. **semisquarrosus**, Russ. ; Coult. Bot. Gaz. XV. 224.

Metis, St. Lawrence River, Quebec. (*Pringle.*) Bass River, Kent Co., N.B. (*Fowler.*) Boggy woods, Salt Lake, Anticosti ; bogs at Sudbury Junction, Ont. ; wet woods near London, Ont. ; in bogs at Revelstoke, B.C. (*Macoun.*)

Var. **speciosus**, Russ.

In peat bogs at Tignish, Prince Edward Island ; damp woods near Ottawa and the Mer Bleu ; common in wet, swampy woods, near Belleville, Hastings Co., Ont. (*Macoun.*) In bogs by Burnaby Lake, Hastings, B.C. (*J. M. Macoun.*)

Var. **imbricatum**, Schp.

Bogs, Portage La Loche, lat. 57°, and near Lesser Slave Lake, N. W.T. (*Macoun.*)

- (16.) **S. teres**, Aongstr. ; Coult. Bot. Gaz., XV. 224.

Miquelon Island. (*Delàmare.*)

Var. **imbricatum**, Warnst. ; Coult. Bot. Gaz. XV. 224.

Peat bog along the Eagle River a little west of Craigellachie, B. C. (*Macoun.*) Peat bog, Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Cape Prince of Wales and Stupart's Bay, Hudson Strait. (*R. Bell.*)

Var. **squarrosulum**, Lesq. ; Coult. Bot. Gaz. XV. 224.

In a swamp 15 miles west of Port Arthur, Lake Superior. (*Macoun.*)

- (17.) **S. Wulfianum**, Girg.; Coult. Bot. Gaz., XV., 225; Canadian Musci, No. 11.

Quite common in boggy woods, Hastings Co., Ont.; peat bogs, Sudbury Junction, Ont.; in bogs along Lesser Slave Lake, N.W.T. (*Macoun.*)

Var. **versicolor**, Warnst.; Coult. Bot. Gaz. XV. 225.

Peat bog, Portage La Loche, N.W.T., lat. 57°. (*Macoun.*)

Var. **macroclada**, Warnst. (MS.)

Damp woods in rear of Beechwood Cemetery, Ottawa, Ont. (*Macoun.*)

Var. **viride**, Warnst.; Coult. Bot. Gaz. XV. 225.

Wet places at the Race-course, Ottawa, Ont. (*Macoun.*)

- (18.) **S. compactum**, DC.; Coult. Bot. Gaz., XV., 226; Canadian Musci, No. 12.

Miquelon Island. (*Delàmare.*) Cap St. Ignace, Montmagny, Que. (*St. Cyr.*)

Var. **subsquarrosus**, Warnst.; Coult. Bot. Gaz. XV. 226.

Peat bog near Campbellton, N.B.; bogs, Brackley Point and Tignish, Prince Edward Island; bogs along Nepigon River, Ont.; peat bogs along Lesser Slave Lake, N.W.T. (*Macoun.*)

Var. **squarrosus**, Russ.; Coult. Bot. Gaz. XV. 226.

In peat bogs, Kingston, N.B. (*Fowler's Cat.*)

Var. **papillosum**, Warnst. (MS.)

In peat bogs, Portage La Loche, lat. 57°, N.W.T. (*Macoun.*)

- (19.) **S. Carberi**, Lesq. & James, Mosses of N. America, 18.

Come by Chance, Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (20.) **S. Pylalei**, Brid.; Coult. Bot. Gaz., XV., 242.

Newfoundland. (*Pylais.*) Miquelon Island. (*Delàmare.*)

Var. **ramosum**, Warnst., forma **nigricans**, Brid.; Coult. Bot. Gaz. XV. 243.

Miquelon Island. (*Delàmare.*) Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (21.) **S. subsecundum**, Nees.; Coult. Bot. Gaz., XV., 246 ; Canadian Musci, No. 13.

Bass River, Kent Co., N.B. (*Fowler*.) Bog along Hooper's Lake, Hastings Road, North Hastings, Ont.; wet woods, Point aux Pins, Lake Superior; marsh by Gull Lake, Victoria Co., Ont.; bogs, Lake Nepigon, Ont. (*Macoun*.) In marshy spots, Canaan Forks, N.B. (*J. Moser*.)

- (22.) **S. rufescens**, Bryol. Germ.; Coult. Bot. Gaz., 246.

In peat bogs at Truro and Kingston, N.S. (*Macoun*.) New Harbor Brook, Newfoundland. (*Rev. A. Waghorne*.)

- (23.) **S. imbricatum**, (Hornsch.) Russ.; Coult. Bot. Gaz., XV., 249.

Miquelon Island. (*Delàmare*.)

Var. **cristatum**, Warnst.; Coult. Bot. Gaz. XV. 250.

Peat bogs at Louisburg, Cape Breton, N.S. (*Macoun*.)

Var. **affine**, (Ren. & Card.) Warnst.; Coult. Bot. Gaz. XV. 250.

Boggy meadows, near Truro, N.S. (*Macoun*.) In boggy places, Canaan Forks, N.B. (*J. Moser*.)

- (24.) **S. cymbifolium**, Ehrh.; Coult. Bot. Gaz. XV. 251.

Very common in peat bogs throughout Ontario, but seldom separated from the variety. (*Macoun*.) Old Ship, New Harbor, Newfoundland. (*Rev. A. Waghorne*.)

Var. **laeve**, Warnst.; Coult. Bot. Gaz., XV., 250; Canadian Musci, No. 9.

Peat bogs, Brackley Point, and Otter Pond, Prince Edward Island; abundant in the Mer Bleue and at the Race-course, near Ottawa; common in bogs, Hastings Co., Ont.; Port Dover, Lake Erie, Ont.; boggy woods near Hastings, B.C.; also on Mount Arrowsmith, Vancouver Island. (*Macoun*.)

- (25.) **S. papillosum**, Lindb.

Miquelon Island. (*Delàmare*.) Bogs, Truro, N.S. (*Macoun*.) In bogs at Canaan Forks, N.B. (*J. Moser*.) Centre Hill, New Harbor, Newfoundland. (*Rev. A. Waghorne*.)

Var. **læve**, Warnst. (MS.)

In bogs, Victoria Co., Ont. (*Macoun.*)

Var. **sublæve**, Limpr.

In bogs, Hastings Co., Ont. (*Macoun.*)

- (26.) **S. medium**, Limpr. Var. **læve**, forma **purpurascens**, Russ.; Coult. Bot. Gaz., XV., 252; Canadian Musci, No. 15.

Bass River, Kent Co., N.B. (*Fowler.*) Otter Pond, Prince Edward Island; peat bog, Mer Bleue near Ottawa; abundant in peat swamps at Belleville, Ont.; peat bogs along Lake Nepigon, Ont.; peat bogs along Lesser Slave Lake, N.W.T. (*Macoun.*)

Var. **pallescent**, Warnst. (MS.)

Otter Pond, Prince Edward Island. (*Macoun.*) Bogs, Newboro, near Kingston, Ont. (*Prof. Lawson.*)

Var. **roseum**, Warnst. (MS.)

Grand Lake, N.B. (*Fowler.*)

- (27.) **S. molluscum**, Bruch.; Canadian Musci, No. 14.

S. tenellum, Lesq. & James, Mosses of N. America, 20.

New Harbor, Newfoundland. (*Rev. A. Waghorne.*) In peat bogs, Salt Lake, Anticosti; peat bog near the summit of Mount Arrowsmith, Vancouver Island; alt. 5,400 feet. (*Macoun.*)

ORDER II. ANDREÆACEÆ. SCHIZOCARPOUS MOSSES.

2. ANDREÆA, Ehrhart.

- (28.) **A. petrophila**, Ehrh.; Lesq. & James, Mosses of N. America, 25; Canadian Musci No. 16.

In small, fragile, olive-green tufts on granitic and other metamorphic rocks across the continent. Truro, N.S.; Sudbury Junction, Lake Superior and Lake Nepigon, Ont.; Hector, Rocky Mountains; Roger's Pass, Selkirk Mountains, and on the Gold Range at Griffin Lake, B.C.; Mounts Benson and Arrowsmith, Vancouver Island. (*Macoun.*) Smith's Sound. Lat. 78—82°. (*Dr. Hayes.*) Jakobshavn, Greenland. (*R. Brown.*)

- (29.) **A. alpestris**, Schimp. Br. Europ. VI. t. 4.

A. petrophila, Ehrh. var. *alpestris*, Thed. ; Braithw. Brit. Moss-Fl. I. 8.

Differs from *A. petrophila* in the tufts being black and somewhat glossy in the dry state, the leaves smaller, less distinctly papillose, when dry closely imbricated, the upper leaf cells one-half smaller.

New to America. On damp rocks, North West Arm, Halifax, N.S., June 18th, 1883. (*Macoun.*) Christianshaab, Greenland. (*Fl. Gr.*)

- (30.) **A. Huntii**, Limpr. Laubm. Deutschl. 145.

Differs from *A. crassinervis* principally in the subula of the leaf, only about a half formed by the costa, and the very papillose perigonal and perichetial leaves, also in the larger capsule.

This species is often confounded with *A. Rothii*, Web. & Mohr. On rocks, Mount Arrowsmith, Vancouver Island. Alt. 5,500 feet. July 18th, 1887. (*Macoun.*) New to America.

- (31.) **A. obovata**, Thed. ; Greenland Flora, 399.

Disco Island, Greenland. (*Fl. Gr.*)

- (32.) **A. Blyttii**, Schimp. ; Greenland Flora, 400.

Jakobshavn, Greenland. (*Fl. Gr.*)

- (33.) **A. crassinervis**, Bruch ; Lesq. & James Mosses of N. America, 26.

Greenland. Godhavn. (*Fl. Gr.*)

- (34.) **A. Macounii**, Kindb. ; Bull. Torr. Bot. Club, April, 1890.

Stem elongate, about 5 c. m. high. Tufts soft well cohering, dark brown or brick-red, not glossy. Leaves narrow from the broader base suddenly long acuminate, distinctly but faintly papillose, more or less curved, the uppermost falcate, when dry subcrispate ; cells uniform subquadrate ; costa narrow, linear, nearly smooth, in the upper leaves long-excurrent and denticulate, sometimes to the middle. Dioecious.

This lovely species is closely allied to the European *A. nivalis*, Hook. ; but the leaves are narrower and very much less papillose, principally on the stouter, more defined, purple-red and often excurrent costa.

In cushions and flat mats on the inclined faces of rocks on the

mountains and by brooks flowing from perpetual snow on the Gold Range north of Griffin Lake, B.C. Alt. 7,500 feet. August 8th, 1889. (*Macoun.*)

(35.) **A. parvifolia**, C. Muell. Flora, (1887) 14.

Alaska. (*Roth. Alask.*)

ORDER III. BRYACEÆ. TRUE MOSSES.

SERIES I. ACROCARPI.

TRIBE I.—PHASCEÆ.

3. EPHEMERUM, Hampe.

(36.) **E. minutissimum**, Lindb. Manip. Musc. II. 411.

E. serratum, Hampe. Var. *angustifolium*, Schimp.; Lesq. & James, Mosses of N. America, 38; Canadian Musci No. 465.

Phascum serratum, Drummond Musc. Bor.-Am. No. 10.

On earth at Carleton House on the Saskatchewan, N.W.T. (*Drummond.*) Abundant on inundated ground along the outlet of Leamy's Lake, near Hull, Que. (*Macoun.*)

4. SPHÆRANCIUM, Schimp.

(37.) **S. triquetrum**, (Spruce.) Schimp.; Lesq. & James, Mosses of N. America, 41.

Phascum muticum, Drumm. Musc. Bor.-Am. No. 8.

On earth at Carleton House on the Saskatchewan, N.W.T. (*Drummond.*)

5. PHASCUM, Linn. (In part.)

(38.) **P. piliferum**, Schreb. Phasc. t I. fig. 7.

P. cuspidatum, Schreb. var. *piliferum*, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 42.

P. cuspidatum, Drumm. Musc. Bor.-Am. No's. 5 and 7.

(No. 5) On the borders of Stony Lake, Rocky Mountains. (No. 7) Plains at Carleton House on the Saskatchewan, N.W.T. (*Drummond.*)

- (39.) **P. subexsertum**, Hook. (n. sp.) Drumm. Musc. Bor.-Am., No. 9.

"Acaule caespitosum foliis lingulato-oblongis patentibus apiculatis, capsulis subexsertis sphaericis apice acuminatis. Hooker."

Carlton House, Saskatchewan, N.W.T. (*Drummond.*)

6. ARCHIDIUM, Brid.

- (40.) **A. Ohioense**, Schimp.; Lesq. & James, Mosses of N. America, 50.

On inundated soil at the outlet of Leamy's Lake, near Hull, Que. (*Macoun.*)

TRIBE II. WEISIEÆ.

7. ASTOMUM, Hampe.

- (41.) **A. crispum**, Hampe.; Lesq. & James, Mosses of N. America, 51.

Phascum crispum, Hedw.; Drumm. Musc. Bor.-Am. No. 11.

Moist places on the plains of the Saskatchewan, N.W.T. (*Drummond.*)

- (42.) **A. Drummondii**, Kindb.

Gymnostomum phascoides, Hook. (n. sp.); Drumm. Musc. Bor.-Am. No. 12.

"Subacaule caespitosum, foliis lineari-subulatis integerrimis, seta foliorum longitudine, capsulis globosis operculo conico rostrato. Hooker."

Plains of the Saskatchewan, in moist places. (*Drummond.*)

8. CYMNOSTOMUM, Hedw.

- (43.) **C. calcareum**, Nees & Hornsch.; Lesq. & James, Mosses of N. America, 53.

G. tortile, Drummond, Musc. Bor.-Am. 23.

Quite common on moist calcareous rocks at Owen Sound, 1874; also on calcareous rocks near the Whirlpool, Niagara Falls. (*Macoun.*) Limestone rocks, Lake Winnipeg. (*Drummond.*) Pictou Co., N.S. (*McKay.*) On rocks, New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

Var. **brevifolium**, Schimp. ; Lesq. & James, Mosses of N. America, 53.

On calcareous earth along the Moira River above Belleville, Ont., 1863. (*Macoun.*)

(44.) **C. rupestre**, Schwaegr. ; Lesq. & James, Mosses of N. America, 53 ; Drumm. Musc. Bor.-Am. No. 24. ; Canadian Musci No. 18.

Schistose rocks on the Columbia River, and on rocks on the borders of Lake Winnipeg. (*Drummond.*) On rocks along the Nepigon River north of Lake Superior, 1884, and near the Whirlpool, Niagara Falls ; crevices of rocks, Mount Stephen, Rocky Mountains ; crevices of rocks, Deer Park, Lower Arrow Lake and at Sproat Mountain, Columbia River, B.C. (*Macoun.*)

Var. **stelligerum**, Schimp. ; Lesq. & James, Mosses of N. America, 53.

On calcareous rocks along the Gaspé Coast, River St. Lawrence, 1882. (*Macoun.*)

(45.) **C. curvirostrum**, Hedw. ; Lesq. & James, Mosses of N. America, 54 ; Drumm. Musc. Bor.-Am. No's. 25 and 26 ; Canadian Musci No. 17.

On dripping rocks throughout Canada. Alpine rocks, common ; and at Niagara Falls. (*Drummond.*) Clefts in rocks at Cape Tourelle, near Ste. Anne des Monts, Gaspé Co., Que. (*J. A. Allen.*) South-west Point and Gunn River, Anticosti, 1883 ; Little Fox River, Gaspé, Que. ; Sydenham Falls, Owen Sound, Ont. ; calcareous springs, Hudson Hope, Peace River, 1872 ; also at Morley and Kicking Horse Lake, Rocky Mountains, 1885. (*Macoun.*) Limestone rocks, Clearwater River, N.W.T. Lat. 57°. (*J. M. Macoun.*) Crevices of rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

(46.) **C. platyphyllum**, Kindb. ; Bull. Torr. Bot. Club, April, 1889 ; Canadian Musci No. 506.

Diœcious. Plants green, not glossy. Stem not papillose, sparingly radiculose, leaves decurrent, distinctly papillose, short, obtuse, oblong-lanceolate, the comal greater, one border often recurved all around ; costa greenish yellow, very papillose.

Collected June 16th, 1889, on the face of a small water-fall in the brook that flows into the Thompson just west of Kamloops, B.C.

The falls are less than half a mile south of the C. P. R. Railway. (*Macoun.*)

- (47.) **G. tenue**, Schrad. ; Lesq. & James, Mosses of N. America, 54 ; Drumm. Musc. Bor.-Am. No. 21.

Limestone rocks of Lake Winnipeg. (*Drummond.*) On the "Great Trent Boulder" three miles above the Railway Bridge (west side) near Trenton, Ont., 1866 ; on calcareous rocks at Owen Sound, Ont., 1871. (*Macoun.*)

9. EUCLADIUM, Bryol. Europ.

- (48.) **E. verticillatum**, Bryol. Europ.

On calcareous tufa deposited by the "Warm Springs" on the west side of Kootanie Lake, B.C., 1890. (*Macoun.*) New to America.

10. ANECTANGIUM, Schwaegr. (In part.)

- (49.) **A. compactum**, Schwaegr. ; Greenland Flora, 398.

Greenland. (*Fl. Gr.*)

11. WEISIA, Hedw.

- (50.) **W. viridula**, Brid. ; Lesq. & James, Mosses of N. America, 55 ; Canadian Musci No. 515.

W. controversa, Drumm. Musc. Bor.-Am. No. 67.

Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On the ground in the plains of Carleton House, Saskatchewan, N.W.T. (*Drummond.*) On earth along the high bank, south of the railway crossing in Belleville, Ont., 1864 ; on earth in woods at Leamy's Lake, near Hull, Que., 1889 ; on earth at Victoria, Vancouver Island. (*Macoun.*) On earth at London, Ont. (*J. Dearness.*)

- (51.) **W. convoluta**, C. M. & Kindb. (n. sp.)

Tufts dense, dark green. Stem slender, branching, densely foliate. Leaves very patent when moist, flexuous, from a broader oblong base narrowed into the very narrow and long often piliform acumen, margins entire and erect ; cells small, quadrate chlorophyllose opaque ; costa very thin, vanishing in the acumen. Perichetial leaves broader vaginant at the base, shorter than the other, densely appressed

involving the pedicel; capsule cylindric, very narrow, faintly curved; lid obliquely rostrate; pedicel yellowish, elongate, slender, spirally twisted, narrowed to the capsule.

This species differs from *Weisia viridula* principally in the longer, narrower capsule, the leaves not involute and in the not excurrent costa.

Crevices of rocks near the summit of Copper Mountain south of Bow River, at Silver City, Rocky Mountains. Alt. 7,700 feet. 1885. (*Macoun.*)

12. DICRANOWEISIA, Lindb.

- (52.) **D. crispula**, Lindb.; Lesq. & James, Mosses of N. America, 57; Canadian Musci No. 477.

Weisia crispula, Hedw.; Drumm. Musc. Bor.-Am. No. 69.

On rather dry rocks in a ravine, Mount Albert, Gaspé Co., Que. (*A. J. Allen.*) Rocks among the Rocky Mountains. (*Drummond.*) Mountains south-west of Kamloops, B.C., 1888. (*Dawson.*) Dry rocks along the C. P. Ry., three miles west of Hector, Rocky Mountains, 1885, and on rocks in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Smith's Sound. (*Dr. Kane.*) Godhavn, Greenland. (*R. Brown.*)

- (53.) **D. cirrhata**, Lindb.; Lesq. & James, Mosses of N. America, 57. Canadian Musci No. 19.

On rocks near Johnston Strait, Gulf of Georgia, B.C. (*Dawson.*) Very common on rocks and prostrate trunks in all parts of Vancouver Island, 1887; on dead wood at Hastings, B.C., 1889; on rocks at the Hot Springs, Kootanie Lake, B.C., also on rocks at Deer Park, Lower Arrow Lake, Columbia River. (*Macoun.*)

13. OREOWEISIA, Schimp.

- (54.) **O. serrulata**, Schimp.; Lesq. & James, Mosses of N. America, 58.

Nulato, Alaska, (*Roth. Alask.*) On wet rocks along the shore of Lake Superior, ten miles south of Port Arthur, 1869. (*Macoun.*)

Var. **tenuior**, Kindb. (n. var.)

On rocks by the torrent at Hector, Rocky Mountains. (*Macoun.*)

14. RHABDOWEISIA, Bruch & Schimp.

- (55.) **R. fugax**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 59.

On rocks at Sudbury Junction, 1884, north shore of Lake Superior at Pic River, 1869, and on rocks, Lake Nepigon, 1884; limestone rocks, Owen Sound, Ont. (*Macoun.*)

- (56.) **R. denticulata**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 59.

Weisia striata, Drumm. Musc. Bor.-Am. No. 68.

Near New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Abundant below Norway House, about Lake Superior and in the Rocky Mountains. (*Drummond.*)

15. CYNODONTIUM, Schimp.

- (57.) **C. Schisti**, Schimp.; Lesq. & James, Mosses of N. America, 59.

Rocky Mountains. (*Drummond*, vide *Lesq. & James.*) Upervivik, Greenland. (*Fl. Gr.*)

- (58.) **C. gracilescens**, Schimp.; Lesq. & James, Mosses of N. America, 60.

Upervivik, Greenland. (*Fl. Gr.*)

- (59.) **C. alpestre**, Wahlenb.

C. gracilescens, Schimp.; var. *alpestre*, Schimp.; Lesq. & James, Mosses of N. America, 60.

Very likely does not occur in Canada. Occurs in Greenland at Christianshaab. (*Fl. Gr.*)

- (60.) **C. (*Oncophorus*) strumulosum**, C. M. & Kindb. (n. sp.)

Tufts bright green, 1-2 cm. high. Leaves crisped, sub-linear, blunt or sub-acute, recurved at the basal margins, crenulate above, nearly pellucid; basal cells linear, the other short, angular; costa very papillose at back, not percurrent. Perichetial leaves short-acuminate. Capsule small, oblique, oblong-ovate, inclined, when dry furrowed, distinctly strumose; teeth not papillose, cleft to the middle, reddish also in the upper part; annulus distinct; pedicel light red or yellow, straight, 1 cm. long.

On a limestone ledge along the mountain torrent that enters Kicking Horse Lake, two hundred yards from the railway station at Hector, Rocky Mountains, Aug. 13th, 1890. (*Macoun.*)

(61.) **C. subalpestre**, Kindb. (n. sp.) MS.

C. gracilescens, Schimp. : Canadian Musci. No. 20.

Dicranum gracilescens, Austin Musc. Appal. Suppl. I., No. 467.

On the rocks near the sea-shore, Whale Island, Forteau Bay, lat. 51° 49', Labrador; also Forks of the Ste. Anne des Monts River, Gaspé Co., Que. (*J. A. Allen.*) Shore of Lake Huron, near the Fishing Islands; quite common on rocks north shore of Lake Superior and on rocks on the islands in Lake Nipigon and along the "Dawson Route" west of Lake Superior. (*Macoun.*)

(62.) **C. polycarpum**, Schimp.; Lesq. & James, Mosses of N. America, 60; Canadian Musci No. 21, in part.

Dicranum Scottianum, Drumm. Musc. Bor.-Am. No. 102.

On the bases of trees, Rustico Bay, Prince Edward Island, 1888; on logs along the Moira River, at Belleville, Ont., 1870; on rocks, Mount Erskine, Salt Spring Island, Gulf of Georgia, 1887, and on rocks, North Arm, Burrard Inlet, B.C., 1889. (*Macoun.*) On rotten wood, London, Ont. (*J. Dearness.*) Lake Superior, 1848. (*Agassiz.*) Roots of trees, Ontario. (*Drummond.*) Topsail Harbor, Newfoundland. (*Rev. A. Waghorne.*) At Pictou, N.S. (*Fowler's Cut.*) Alaska. (*Roth. Alask.*) Jakobshavn, Greenland. (*R. Brown.*)

(63.) **C. strumiferum**, (Ehrh.) De Not. Epil. 280 (1869.)

C. polycarpum, Schimp.; var. *strumiferum*, Schimp.; Lesq. & James, Mosses of N. America, 60; Canadian Musci No. 21, in part.

Dicranum strumiferum, Drumm. Musc. Bor.-Am. No. 107.

On decaying wood at Wooler, Ont., 1888; on damp rocks, Lake Superior, and the "Dawson Route" west of that lake, 1872; wet rocks, islands in Lake Nipigon, 1884; on rocks, Nanaimo River and Mount Benson, Vancouver Island, 1887. (*Macoun.*) On rocks in the country from York Factory to the Rocky Mountains. (*Drummond.*) Kobbjferd, Greenland. (*Fl. Gr.*)

(64.) **C. virens**, Schimp.; Lesq. & James, Mosses of N. America, 61; Canadian Musci No. 22.

Dicranum virens, Hedw.; Drumm. Musc. Bor.-Am. No. 106.

West Greenland and Smith's Sound. (*Dr. Kane.*) Jakobshavn,

Greenland. (*R. Brown.*) On rocks Hudson Strait, 1885. (*Dr. Bell.*) Abundant on wet rocks at Kicking Horse Lake, Rocky Mountains, 1885; on wet rocks at Pass Creek, near Sproat, Columbia River, B.C. (*Macoun.*) On Mount Queest, Gold Range, B.C., alt. 6,000 feet, 1889. (*J. M. Macoun.*) Smith's Sound. (*Dr. Kane.*) Disco Island, Greenland. (*Fl. Gr.*)

Var. **serratum**, Bruch & Schimp.; Canadian Musci No. 488.

On wet gravel by brooks, chiefly in mountains. Ravine on the side of Mount Albert, Gaspé Co., Que. (*J. A. Allen.*) Salt Lake, Anticosti, 1883; Ste. Anne des Monts River, Gaspé, Que., 1882; on rocks Eagle River, at Craigellachie, also on Mount Queest, Gold Range, 1889, and along the Blackwater River, 1875; between the North Thompson and Bonaparte Rivers, B.C., 1889; on rocks near Victoria, Vancouver Island, 1875; along a brook summit of North Mountain at Hector, Rocky Mountains, and on stones in a brook above Revelstoke, B.C. (*Macoun.*) Smith's Sound. (*Dr. Kane.*)

(65.) **C. Wahlenbergii**, (Brid.); Canadian Musci No. 23.

C. virens, Schimp. var. *Wahlenbergii*, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 61.

Dicranum Richardsoni, (n. sp.) Drumm. Musc. Bor.-Am. No. 104.

West Greenland and Smith's Sound. (*Dr. Kane.*) On fallen trees Bass River, Kent Co., N.B. (*Fowler.*) Tobique River, N.B. (*Hay.*) Generally on decayed trees; in the country extending from Canada to the Rocky Mountains (104). (*Drummond.*) Vicinity of Quebec. (*St. Cyr.*) In bogs, Salt Lake, Anticosti, 1883; decayed wood at Truro, N.S., 1883; on logs, coast of Gaspé, Que., 1882; on dead and decaying logs at Leamy's Lake, near Hull, Que., 1889; Sudbury Junction (1884), and in woods at Belleville, Ont., 1867; on decaying logs Winnipegosis, Man., 1881. (*Macoun.*) On old logs in woods, Newfoundland. (*Rev. A. Waghorne.*) Smith's Sound. (*Dr. Kane.*) Disco Island, Greenland. (*Fl. Gr.*)

Var. **compactum**, (Schimp).

D. microcarpum, (n. sp.) Drumm. Musc. Bor.-Am. No. 105.

On moist barren spots; near the Rocky Mountains (105). (*Drummond.*) On old logs at Gananoque, Ont. (*Fowler.*) Peat bog, Salt Lake, Anticosti. (*Macoun.*) On the coast of Labrador at Forteau Bay; also on exposed rocks on the higher part of Table-top Mountain, Gaspé Co., Que. (*J. A. Allen.*)

16. DICHODONTIUM, Schimp.

- (66.) **D. pellucidum**, Schimp.; Lesq. & James, Mosses of N. America, 62; Canadian Musci No. 451.

On earth, Queen's Co., N.B. (*Moser*.) On earth along Hunter's River, Prince Edward Island, 1888; on wet rock, Madeline River, Gaspé, Que., 1882; on stones in Sydenham River, Owen Sound, Ont.; on stones in Eagle River at Griffin's Lake, Gold Range, B.C., 1889; on stones in brooks at Revelstoke, B.C., 1890; on stones at Goldstream, Vancouver Island, 1887; on stones in a brook, eastward in Roger's Pass, Selkirk Mountains, and at Hector, Rocky Mountains. (*Macoun*.) Disco Island. (*Fl. Gr.*)

Var. **fagimontanum**, Braithw. British moss-flora 163.

In mud by a brook at Hector, Rocky Mountains, Aug. 14th, 1890, (*Macoun*.)

- (67.) **D. flavescens**, Lindb. in Botan. notiser 1878, p. 113; Canadian Musci No. 402.

D. pellucidum, Schimp. var. *serratum*, Schimp.; Lesq. & James, Mosses of N. America, 62.

Mount Albert, Gaspé Co., Que., and at Forteau, Labrador, lat. 57°. (*J. A. Allen*.) Blackwater River, northern British Columbia, 1875; wet cuttings along the C. P. Railway, east of Hastings, and at Yale, B.C., 1889; wet slopes of Mount Arrowsmith, Vancouver Island, 1887; on stones and wet rocks along the Columbia, one mile above Revelstoke, B.C., 1890. (*Macoun*.)

17. TREMATODON, Michx.

- (68.) **T. ambiguum**, Hornsch.; Lesq. & James, Mosses of N. America, 63; Canadian Musci No. 24.

On earth, chiefly along roadsides. Topsail Harbor, Newfoundland. (*Rev. A. Waghorne*.) Pictou, and Halifax Co., N.S. (*McKay*.) Miquelon Island. (*Delamare*.) Tay, York Co.; and Never's Rapids, Queen's Co., N.B. (*J. Moser*.) Tobique River, N.B. (*Hay*.) Bass River, Kent Co., N.B. (*Fowler*.) Clay banks of Black River, Prince Edward Island, 1888; roadsides, Truro, N.S., 1883; on earth near Flinton, North Hastings, and at Owen Sound, Ont., 1871; border of a bog, Craigellachie, Eagle River, B.C., 1889. (*Macoun*.)

- (69.) **T. brevicollis**, Hornsch. ; Bryol. Europ. I. tab. 95.
Greenland. (*Fl. Gr.*)

18. **ÂNCSTRÆMIA**, Bruch & Schimp.

- (70.) **Â. longipes**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 63 ; Canadian Musci No. 25.

Dicranum julaceum, Drumm. Musc. Bor.-Am. No. 100.

Dicranum varium, Drumm. Musc. Bor.-Am. No. 99, in part.

Banks of Portage River, near the Columbia River, Rocky Mountains. (*Drummond.*) Alluvium along Six Mile Creek (1885) and along the discharge of the Asulean Glacier, Selkirk Mountains, B.C., 1890. (*Macoun.*) Greenland. (*Fl. Gr.*)

19. **DICRANELLA**, Schimp.

- (71.) **D. crispa**, Schimp. ; Lesq. & James, Mosses of N. America, 64 ; Canadian Musci, No. 504.

Dicranum crispum, Drumm. Musc. Bor.-Am. 101.

Banks of Baptiste River, and near the "Height of Land," Rocky Mountains. (*Drummond.*) Galton Mountains, B.C. (*Lyall.*) On earth at McLeod's Lake, lat. 55°, 1875 ; on damp earth on stumps and banks Six Mile Creek, (1885) and Roger's Pass, Selkirk Mountains, B.C., 1890. (*Macoun.*) Kotzebue Sound. (*Roth. Alask.*) Christianshaab, Greenland. (*Fl. Gr.*)

- (72.) **D. Grevilleana**, Schimp. ; Lesq. & James, Mosses of N. America, 64 ; Canadian Musci, No. 482.

Dicranum Schreberianum, Drumm. Musc. Bor.-Am. No. 97.

Banks in alpine situations ; and about York Factory, Hudson Bay. (*Drummond.*) On wet earth along Jupiter River, Articosti, 1883 ; wet gravelly soil and damp earth at Hector, Rocky Mountains, 1890 ; Six Mile Creek and Roger's Pass, Selkirk Mountains, B.C., 1885. (*Macoun.*)

- (73.) **D. Schreberi**, Schimp. ; Lesq. & James, Mosses of N. America, 64 ; Canadian Musci, No. 403.

D. Schreberi, var. *occidentalis* ; Canadian Musci No. 495.

Dicranum Schreberianum, Drumm. Musc. Bor.-Am. 97.

Banks in alpine situations ; and about York Factory, Hudson Bay.

(*Drummond.*) On earth and stones in a brook near Trenton, and on damp earth by roadsides at Owen Sound, Ont., 1871; wet earth along Lesser Slave Lake, 1872; on wet earth at Quesnel, B.C., 1875; in limestone springs at Sicamous, B.C., 1889; and at Hector, Rocky Mountains, 1890. (*Macoun.*) Summit of Mount Queest, Gold Range, B.C., alt. 7,000 feet. (*J. M. Macoun.*)

(74.) **D. squarrosa**, Schimp.; Lesq. & James, Mosses of N. America, 65.

In peat bogs, Salt Lake, Anticosti; wet gravelly soil along the C. P. Railway in Roger's Pass, Selkirk Mountains, 1890. (*Macoun.*) Queen's Co., N.B. (*J. Moser.*) Alaska. (*Harrington.*) Lyngemarken and Egedesminde, Greenland. (*R. Brown.*)

(75.) **D. cerviculata**, Schimp.; Lesq. & James, Mosses of N. America, 65; Canadian Musci, No. 476.

Jakobshavn, Greenland. (*R. Brown.*) Miquelon Island. (*Delamare.*) On damp earth, Carleton Co., N.B. (*Fowler.*) On wet earth at Brackley Point and Black River, Prince Edward Island, 1888; abundant on earth by a glacier stream where it enters Bear Creek, and along an old road Roger's Pass, Selkirk Mountains. (*Macoun.*) On rotten wood, St. John, N.B. (*Fowler's Cat.*)

(76.) **D. varia**, Schimp.; Lesq. & James, Mosses of N. America, 65; Canadian Musci, No. 26.

Dicranum varium, Drumm. Musc. Bor.-Am. No. 99, in part.

On clay at Truro, N.S.; (*Fowler's Cat.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Wet ground, chiefly by the sides of ditches. Springy places at Truro, N.S., 1883; along old roads, Gaspé Co., Que., 1882; sides of ditches Experimental Farm, Ottawa; overflowed ground, Leamy's Lake, near Hull, Que.; common at Belleville, Wooler and Owen Sound, Ont.; Lesser Slave Lake and Fort Assiniboine on the Athabasca River, 1872. (*Macoun.*) Banks of rivers; in the country extending from York Factory to Rocky Mountains. (*Drummond.*) On wet clay banks, London, Ont. (*J. Dearness.*)

(77.) **D. parvula**, Kindb.; Bull. Torr. Bot. Club, April, 1889.

Allied to *D. varia*. Plants very short, densely caespitose in small tufts, dark green. Leaves crenulate all around, sub-ovate; cells short, oblong-quadrate, the basal linear; costa very thick and brown, excur-

rent, denticulate above, forming at least half the acumen. Perichetial leaves denticulate above. Capsule obovate, sub-erect or inclined without a neck, not striate; beak very short and thick; annulus scarcely loosed; teeth orange, pale at apex, partite, without basilar membrane, not papillose; pedicel pale red-yellow 1 c. m. long or shorter, straight or curved only at apex. Dioecious.

On earth, on the northern slope of Cathedral Mountain, Kicking Horse River, Rocky Mountains, B.C. Alt. 6,500 feet. July 28th, 1885. (*Macoun.*)

- (78.) **D. rufescens**, Schimp.; Lesq. & James, Mosses of N. America, 66; Canadian Musci, No. 27.

On earth, Bass River, Kent Co., N.B. (*Fowler.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) By roadsides, on wet earth, at Brackley Point and Black River, Prince Edward Island, 1888; in cuttings along the C. P. Railway, east of Hastings, and by a brook at Yale, B.C.; common on wet earth at Owen Sound, Ont., 1874. (*Macoun.*)

- (79.) **D. subulata**, Schimp.; Lesq. & James, Mosses of N. America, 66; Canadian Musci, No. 28.

Dicranum subulatum, Drumm. Musc. Bor.-Am. No. 98.

Disco, Greenland. (*Fl. Gr.*) Kouchibouguac, N.B. (*Fowler's Cat.*) Tay, York Co., N.B. (*J. Moser.*) On old roads along the Gaspé Coast, Que., 1882; on earth, Salmon River, near Fort McLeod, B.C., 1875; very abundant along the C. P. Railway at Hector, Rocky Mountains; along Bear Creek in Roger's Pass, and at the Asoulcan Glacier, Selkirk Mountains, B.C., 1890. (*Macoun.*) Banks in alpine situations. (*Drummond.*)

- (80.) **D. heteromalla**, Schimp.; Lesq. & James, Mosses of N. America, 66; Canadian Musci, No. 29.

Dicranum heteromallum, Drumm. Musc. Bor.-Am. No. 95.

" " var. *caulibus foliisque longioribus*, Drumm. Musc. Bor.-Am. No. 96.

Near the Columbia (No. 95); Upper Canada (No. 96). (*Drummond.*) Miquelon Island. (*Delamare.*) Common in Nova Scotia. (*McKay.*) On clay banks at Pirate's Cove, Yarmouth, and Truro, N.S., 1883; on earth Rustico Bay, Prince Edward Island, 1888; on the summit of Mount Albert, and at Gaspé Basin, Gaspé Co., Que., 1882; common

in woods at Ottawa, Carleton Place, Sudbury Junction, Collingwood, Owen Sound, Belleville and Brighton, Ont.; Comox, Vancouver Island; on turned up trees at Hastings and in wet cuttings along the C. P. Railway east of Hastings, B.C. (*Macoun.*) On earth at London, Ont. (*J. Dearness.*) On earth at Topsail Harbor, Newfoundland. (*Rev. A. Waghorne.*) Moist ground; common, N.B. (*Fowler's Cat.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Alaska. (*Roth. Alask.*)

20. DICRANUM, Hedw.

- (81.) **D. hyperboreum**, (Gunn.) Smith; Greenland Flora, 386.

Disco, Greenland. (*Fl. Gr.*)

- (82.) **D. fulvellum**, Smith; Lesq. & James, Mosses of N. America, 68.

Greenland. (*Fl. Gr.*)

- (83.) **D. molle**, Wils.; Braithw. British Moss Flora, 144.

D. arcticum, Schimp. Bryol. Europ. ed. 2, 93.

Tufts large, dense 6-15 cm. high, yellow-green or olivaceous above, fuscous below. Stem eradiculose. Leaves erecto-patent, straight, glossy, oblong-lanceolate, nearly entire; cells narrow-linear, the angular quadrate, orange; costa narrow, vanishing at the apex. Capsule oblong-cylindric, cernuous incurved substrumose not striate, fuscous; annulus simple; lid short-beaked; peristome purple. Monœcious; male inflorescence close to the perichætium.

Allied to *D. Starkii*, but the capsule is greater, and the costa not excurrent. Greenland. (*Fl. Gr.*)

- (84.) **D. Starkii**, Web. & Mohr.; Lesq. & James, Mosses of N. America, 68; Canadian Musci, No. 30; Drumm. Musc. Bor.-Am. No. 83.

Rocks upon the "Height of Land," Rocky Mountains. (*Drummond.*) On wet rocks, Mount Albert, Gaspé Co., Que.; on the faces of perpendicular rocks Mount Benson, Mount Arrowsmith and Mount Mark, Vancouver Island, 1887; on flat rocks, mountains north of Griffin Lake in the Gold Range, also on rocks at the Asulkan Glacier, Selkirk Mountains, B.C. (*Macoun.*) Smith's Sound. (*Dr. Kane.*)

- (85.) **D. Blyttii**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 68 ; Canadian Musci, No. 32.

In a peat bog at Salt Lake, Anticosti, 1883 ; damp rocks, Mount Benson, Vancouver Island, 1887 ; on rocks at the " Hot Springs," Kootanie Lake, B.C. ; alt. 4,500 feet, and at the Asulcan Glacier, Selkirk Mountains. (*Macoun.*) Upnivik, Greenland. (*Fl. Gr.*)

- (86.) **D. strictum**, Schleich. ; Lesq. & James, Mosses of N. America, 69 ; Canadian Musci, No. 33.

D. elongatum, var *minor*, Drumm. Mus. Bor.-Am., No. 81.

Quite common on decaying logs, especially westward. Decayed trunks, Lake Superior, 1848. (*Agassiz.*) Porcupine Mountains, Man., 1881 ; St. John's, Peace River, and Lesser Slave Lake, N.W.T., 1872 ; Comox, Cedar Hill and Nanaimo, Vancouver Island, 1887 ; at Sicamous, Yale, Hastings, Agassiz and North Arm of Burrard Inlet, B.C., 1889 ; on bases of trees at Revelstoke, and rotten wood at Deer Park, Lower Arrow Lake, Columbia River, B.C., 1890. (*Macoun.*) Decayed trunks, Tobique River, N.B. (*Hay.*) On decayed wood, rare. (*Drummond.*)

- (87.) **D. montanum**, Hedw. ; Lesq. & James, Mosses of N. America, 69 ; Canadian Musci, No. 34.

Abundant on decaying trunks and bases of standing trees, eastward. On trees in woods, Newfoundland. (*Rev. A. Waghorne.*) Pictou Co., N.S. (*McKay.*) Tay, York Co. ; also Canaan Forks, N.B. (*J. Moser.*, Miquelon Island. (*Delamare.*) On logs, Tobique River, N.B. (*Hay.*) Rotten wood, Bass River, and Fredericton, N.B. (*Fowler.*) Old logs, Rustico Bay and Hunter's River, Prince Edward Island, 1888 ; in woods, Gaspé Co., Que., and at Leamy's Lake, near Hull, Que. ; on bases of trees at Belleville, Sudbury Junction and near Otter Head, Lake Superior ; shore of Lake Huron near Wiarton and Nepigon House, Lake Nepigon, Ont. ; on old logs, Manitoba House, Lake Manitoba, 1881. (*Macoun.*)

- (88.) **D. fulvum**, Hook ; Lesq. & James, Mosses of N. America, 70 ; Canadian Musci, No. 37.

On boulders, chiefly in damp woods. Tay, York Co., N.B. (*J. Moser.*) On rocks, Tobique River, N.B. (*Hay.*) Halifax Co., N.S. (*McKay.*) On rocks in woods at Sudbury Junction, Ottawa, Belleville and Wooler, Ont. (*Macoun.*) On rocks, Rivière Rouge, Argenteuil Co., Que. (*D'Urban.*)

- (89.) **D. viride**, Schimp.; Lesq. & James, Mosses of N. America, 69; Canadian Musci, No. 35.

Quite common, but always barren, on the bases of growing trees and old lying logs in woods. Green Harbour, Newfoundland. (*Rev. A. Waghorne.*) On trees, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On trees, Rustico Bay, Prince Edward Island, 1888; very common at Ottawa, Belleville, Owen Sound and throughout Ontario; near Morley in the Rocky Mountains, 1885. (*Macoun.*) Common in pulvinate buttons on trees, Nixon's Pond, London, Ont. (*J. Dearness.*)

- (90.) **D. flagellare**, Hedw.; Lesq. & James, Mosses of N. America, 70; Canadian Musci, No. 36.

D. strictum, Drumm. Musc. Bor.-Am. No. 81.

Very common on decaying logs in damp woods. On fallen timber about Lake Superior, &c. (*Drummond.*) On decaying logs, St. John, N.B. (*Fowler's Cat.*) Tay, York Co.; and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Quite common at Sudbury Junction, Ottawa, Belleville, Wooler and throughout Ontario; on logs, Manitoba House, Lake Manitoba; Lesser Slave Lake, N.W.T.; and Quesnel, B.C., 1875. (*Macoun.*) On logs near London, Ont. (*J. Dearness.*)

- (91.) **D. Miquelonense**, Ren. & Card., Coulter's Bot. Gaz. Vol. XIV., 93.

In small, compact, yellowish-green tufts. Stems dichotomous, radiculose below, 1-3 cm. long. Leaves small, short, erect-imbricate or slightly incurved, oblong-lanceolate, acute or obtuse concave, entire or minutely sinuate-denticulate at apex, 2-3 mm. long, .50-.75 mm. broad; costa vanishing near the apex, smooth or scarcely rugose at back. Cells of the areolation smooth, small, short, quadrate or irregularly angular in the upper half, rectangular, 1-3 times longer than broad, thin-walled toward the base, the alar lax, large, quadrate or sub-hexagonal, brown or yellowish. Fruit unknown.

Rather resembling in habit the stunted forms of *D. elongatum*, Schw., and *D. Grœnlandicum*, Brid., but quite distinct by the form and areolation of the leaves. It has also some affinities with *D. flagellare*, Hedw.

On ground and rock, Miquelon Island, Gulf of St. Lawrence, (*Delàmare.*)

- (92.) **D. Grœnlandicum**, Brid.

D. tenuinerve, Zett.; Coulter's Bot. Gaz. Vol. XIV. 99.

D. Labradoricum, C. Muell.

Miquelon Island. (*Delàmare.*) Mansfield Island, Hudson Strait. (*R. Bell.*) In bogs, Jupiter River, Anticosti. (*Macoun.*) Labrador and Greenland. (*Kindb.*)

- (93.) **D. subulifolium**, Kindb., Bull. Tor. Bot. Club, Vol. XVII., 87.

Stems low, 2-3 cm. high, not or sparingly radiculose. Leaves yellowish, patent, scarcely brittle, very narrow and subsetaceous, the subula denticulate above; cells narrow porose; costa about one-sixth of the leaf near the base, smooth at the back, often excurrent. Capsule small straight (?) and cylindric; seta yellow.

Allied to *D. angustifolium*, Kindb.; differs in the shorter, more crispate and green leaves, the costa more distinct and broader, about one-sixth of the leaf near the base. The capsules are probably straight but are not ripe in our specimens.

On logs in woods at Cedar Hill, near Victoria, Vancouver Island, 1887; also on logs near Lesser Slave Lake, and at St. John's on Peace River, 1872. (*Macoun*.)

- (94.) **D. angustifolium**, Kindb., Bull. Torr. Bot. Club, Vol. XVII. 86; Canadian Musci, No. 409.

Stem about 5 cm. high, radiculose. Leaves shining subuliform, not undulate, very narrow, 1.5 cm. long, denticulate to $\frac{1}{3}$ or from the middle upward, not crispate, brittle, straight or patent; cells very porose and narrow; outer alar cells brown, inner hyaline; costa smooth at the back, faint and very narrow (about $\frac{1}{10}$ of the leaf near the base) scarcely excurrent.

Allied to *D. subulifolium*, Kindb., but differing in the longer leaves, longer leaf cells and doubly narrower, not excurrent costa. Habit of *D. sulcatum*; differing in the leaves bright green or golden glossy, more distinctly denticulate, 1 cm. long; the cells narrow, the costa scarcely excurrent, faint and very narrow, about $\frac{1}{10}$ of the leaf near the base; the capsule nearly smooth; the peristome brown.

Abundant on damp rocks on the North Arm of Burrard Inlet, and at Craigellachie on Eagle River, B.C., 1889; on damp rocks near Victoria, Vancouver Island. (*Macoun*.)

- (95.) **D. isulcatum**, Kindb. Bull. Torr. Bot. Club, Vol. XVII. 87; Canadian Musci, No. 406.

Dioecious. Stem very tomentose, about 5 cm. high. Leaves green, usually slightly twisted, not undulate, 1-1.5 cm. long, narrow ovate-lanceolate, gradually narrowed into a long setaceous faintly denticulate point, more or less brittle; cells porose, the lower long, the upper short; costa long-excurrent, smooth, broad, $\frac{1}{3}$ of the leaf near the

base. Capsule curved, furrowed when dry, substrumose; peristome dark red; seta 2 cm. long, solitary.

This species could be considered as allied to *D. strictum*, Schleich., and *D. viride*, Schimp., but differs principally in the form of the capsule and in the less brittle leaves; the costa is narrower than in *D. viride*. It has also affinity to *D. majus*, Turn.

On the ground and on logs at Victoria, Vancouver Island, 1885; on the ground in woods at Hastings, and at Agassiz and Sicamous, B.C., 1889. (*Macoun.*)

- (96.) ***D. crispulum***, C. M. & Kindb. (n. sp.); Canadian Musci, No. 41, in part.

Nearly allied to *D. sulcatum*, Kindb., but differing in having a shorter stem, 2-3 cm. high, the leaves crispate, very much shorter, 0.5-0.8 cm. long, the costa less excurrent, rough at the back, the alar cells smaller.

On logs in woods at Comox, Vancouver Island, May 2nd, 1887; on logs in woods Albert Cañon, Illicillewaet River, B.C., May, 1890. (*Macoun.*)

- (97.) ***D. leloneuron***, Kindb., Bull. Torr. Bot. Club, Vol. XVI. 92; Canadian Musci, No. 44, in part, barren specimens.

Diœcious. Plants loosely tufted, about 9 cm. high, pale-yellowish. Stem, tall sparingly radiculose. Leaves suberect, involute nearly all around, not undulate, ovate-lanceolate, narrowed into a short obtusate or subacute acumen, nearly entire or with a few small teeth at the apex; cells not porose, narrow except the basilar; alar cells brown, median basal cells hyaline, inner yellow near the costa; costa smooth and faint, ceasing below the acumen, $\frac{1}{16}$ of the leaf near the base. Barren.

This species has no affinity to the other Canadian *Dicrana* and is very distinct in the long-celled, nearly entire leaves and the costa narrow. In habit it may be compared with some forms of *D. scoparium*, Hedw.

In swampy woods at Salt Lake, Anticosti, August 12th, 1883. (*Macoun.*)

- (98.) ***D. majus***, Turn.; Lesq. & James, Mosses of N. America, 74; Canadian Musci, No. 44, in part, fertile.

Deep cool woods, on the ground. Miquelon Island. (*Delàmare.*) Riviere du Loup (*en bas*). (*St. Cyr.*) On earth at Brackley Point,

P.E.I., 1888; in woods, McNab's Island, Halifax Harbor, N.S., 1883; Fox River, Gaspé Co., Que., 1882; Jupiter River, Anticosti; thick woods at Wooler, Ont., 1888; and on logs in woods near Victoria, Vancouver Island, 1875. (*Macoun.*) Sitka. (*Roth. Alask.*)

(99.) **D. scoparium**, Hedw.; Lesq. & James, Mosses of N. America, 73; Canadian Musci, No. 42; Drumm. Musc. Bor.-Am. No. 80.

Very common on earth and logs throughout Canada. Common throughout the country. (*Drummond.*) Woods near St. Johns, Newfoundland. (*Rev. A. Wagborne.*) Common in N. B. Different forms or varieties occur. (*Fowler's Cat.*) Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Miquelon Island. (*Delamare.*) Kotzebue Sound and Alaska. (*Roth. Alask.*) Baffin's Bay. (*Ross. Voy.*) Smith's Sound. (*Dr. Kane.*) Greenland. (*Fl. Gr.*) Roots of trees Lancaster Beach and Tobique River, N.B. (*Hay.*) Nain, coast of Labrador, 1885. (*R. Bell.*) Common in Nova Scotia. (*McKay.*) Riviere du Loup (*en bas*) Que. (*St. Cyr.*) Rustico Bay and Brackley Point, P.E.I.; Pirate's Cove, Straits of Canso, N.S.; Jupiter River, Anticosti; Mount Albert and Fox River, Gaspé Co., Que.; Ottawa, Carleton Place, North Bay, Lake Nipissing, Belleville, Wooler, Owen Sound, shore of Lake Nepigon, Ont.; also Cedar Hill near Victoria, Vancouver Island. (*Macoun.*) Common at London, and Point Edward, Ont. (*J. Dearness.*)

Var. **scopariiforme**, Kindb., Bull. Torr. Bot. Club, Vol. XVI., 92; Canadian Musci, No. 43.

Intermediate between *D. scoparium*, Hedw. and *D. fuscescens* Turn. Dioecious. Leaves greenish-yellow, flexuous, lanceolate, subulate with a short and flat subula; margin nearly flat or slightly incurved, densely and sharply serrate to one-third; cell-walls rarely interrupted by pores; upper cells oblong-oval, lower not much narrower, inner basal light brown; costa thick, percurrent, with two serrate ridges at the back in the upper part. Capsule curved, not striate; pedicel red, short.

On earth and logs in woods. Bass River, Kent Co., N.B. (*Prof. Fowler.*) The dark colored form at Canaan Forks, N.B. (*J. Moser.*) A dark colored form (*nigrescens*, Kindb.) at Rustico Bay, P.E.I.; Pirate's Cove, Straits of Canso, N.S.; McKay's woods, Ottawa; abundant near Wooler, and at Belleville, Ont.; west of Edmonton, and along Buffalo Lake north of Isle à la Crosse, N.W.T., 1875; in woods at Revelstoke, B.C., 1890. (*Macoun.*) Roots of trees Island Lake, Argenteuil Co., Que. (*D'Urban.*) Bottom of cañon below Elk River Bridge, Rocky Mountains. (*Dr. Dawson.*)

Var. **palidum**, C. Muell.

Miquelon Island. (*Delàmare*.)

(100.) **D. congestiforme**, C. M. & Kindb. (n. sp.)

Differs from *D. congestum*, Brid., in the leaves being less twisted, the upper cells oblong, the costa narrow, the perichetial leaves long-acuminate, the capsule without annulus. Habit of *D. scoparium*, Hedw., but differing principally in the smooth costa, less denticulate leaves and the furrowed capsule. *D. rhabdocarpum* has all leaf-cells narrow.

On damp rocks on the east side of Lake Mara at Sicamous, B.C., July 3rd, 1889. (*Macoun*.)

(101.) **D. congestum**, Brid.; Musc. Recent. Suppl. I., 176; Canadian Musci, No. 408.

D. fuscescens, Lesq. & James, Mosses of N. America, 72, in part.

Differs from *D. fuscescens*, Turn. in the leaves being remotely serrate only above, the upper cells greater, nearly smooth and irregular, the lower porose, the costa narrower, $\frac{1}{2}$ width of the base, and the capsule quite smooth. (*Kindberg*.) Bogs, Mount Albert, Gaspé, 1882. On old logs in woods at Morley, Rocky Mountains, 1885; at Donald in the Columbia Valley, 1889. (*Macoun*.) Sitka. (*Roth. Alaska*.) Christianshaab, Greenland. (*Fl. Gr.*)

(102.) **D. fuscescens**, Turn.; Lesq. & James, Mosses of North America, 72, in part; Canadian Musci, No. 39.

Quite common on old logs across the continent. Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser*.) Miquelon Island. (*Delàmare*.) On logs, Tobique River, N.B. (*Hay*.) On old logs, Bass River, Kent Co., N.B. (*Fowler's Cat.*) On logs, Jupiter River and Becsle River, Anticosti; in woods, Rustico Bay, P.E.I.; Pirate's Cove, Straits of Canso, N.S.; Fox River, Gaspé Co., Que.; on logs, at Ottawa, Belleville, Brighton, North Bay, Lake Nipissing, and Gull River, Peterboro Co., Ont.; on rocks, Lake Superior; old logs, Manitoba House, Lake Manitoba; on earth, Kicking Horse Lake, Rocky Mountains; on rocks at Sicamous, B.C.; Cameron Lake, Vancouver Island. (*Macoun*.) On old logs, Newfoundland. (*Rev. A. Wag-*

horne.) Along the Athabasca River, N.W.T. (*J. M. Macoun.*)
Greenland. (*Fl. Gr.*)

Var. **brevirostre**, Kindb.

Belleville, Ont. ; and Macleod's Lake, B.C. (*Macoun.*)

(103.) **D. Muehlenbeckii**, Bruch & Schimp.; Lesq. & James,
Mosses of N. America, 72; Canadian Musci, No. 481.

On Laurentian rocks at Shannonville, near Belleville, Ont., 1865; on earth at Morley, and on rocks at Hector, Rocky Mountains; on logs, Roger's Pass, Selkirk Mountains, 1885; on earth at C  che Creek, and Blackwater River, B.C., 1875. (*Macoun.*) On the slopes of Mount Queest, Gold Range, B.C., alt., 5,000 feet, 1889. (*J. M. Macoun.*) On old logs, Craigellachie, 1889; woods between St. John and Dunvegan, Peace River, 1872. (*Macoun.*) Smith's Sound. (*Dr. Kane.*)

(104.) **D. brevifolium**, Lindb. Musci Scand., 24; Greenland Flora 392.

Godhavn, Greenland. (*Fl. Gr.*) Digges Island, Hudson Bay. (*R. Bell.*)

(105.) **D. Canadense**, Kindb., Bull. Torr. Bot. Club, Vol. XVII, 87

Size robust. Habit of *D. majus*, Turn., or *D. Drummondii*. Stem radiculose. Leaves indistinctly undulate, long-acuminate, denticulate at the acumen; inner basal cells hyaline, the alar orange, the other cells sublinear and porose; costa smooth or slightly rough, not excurrent, broad at the base, narrow above. Capsule short, beaked, curved, finally costate and blackish.

Nearly allied to *D. subpalustre*, C.M. & Kindb., but the leaves are more gradually narrowed, also the perichetial ones, and very much longer; costa broader at the base.

On earth in woods at Moodyville, Burrard Inlet, B.C., April 19th, 1889. (*Macoun.*)

(106.) **D. leucobasis**, C. M. & Kindb. (n. sp.)

Diœious. Stem very tomentose, 3-4 cm. high. Leaves green, crispate or falcate, faintly sinuose-undulate, narrowly ovate-lanceolate, gradually tapering into a subuliform denticulate, often brittle, point; alar cells fugitive, rectangular, small and yellow, the other lower cells

porose, elongate and hyaline, the upper short and chlorophyllose ; costa scarcely excurrent, nearly smooth, narrow. Capsule curved, small and not furrowed ; pedicel 1 cm. long.

This species is principally remarkable in the whitish leaf-base, but in habit resembling *D. congestum*, *Brid.*

On bases of trees in woods west of the Columbia River at Revelstoke, B.C., May 6th, 1890 ; and in Roger's Pass, Selkirk Mountains. (*Macoun.*)

- (107.) ***D. elongatum***, Schwaegr ; Lesq. & James, Mosses of N. America, 71 ; Drumm. Musc. Bor.-Am., No. 91.

Mountain woods. (*Drummond.*) Miquelon Island. (*Delamare.*) In bogs, New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Northern shores of Lake Superior, 1848. (*Agassiz.*) Mansfield Island, Hudson Strait. (*R. Bell.*) Mount Albert, Gaspé Co., Que. ; borders of Lesser Slave Lake and near Peace River, 1872. (*Macoun.*) Kotzebue Sound. (*Roth. Alask.*) Smith's Sound. (*Dr. Kane.*) Greenland. (*Fl. Gr.*)

- (108.) ***D. plano-alare***, C. M. & Kindb. (n. sp.)

Differs from *D. Labradoricum*, C. Muell. (*D. Grœnlandicum*, *Brid.*, *Limpriht*, *D. tenuinerve*, *Zett.*) in the leaf-cells being greater, short, rectangular and nearly uniform, the alar scarcely greater and not excavate ; leaves green, a little larger with a quite blunt acumen ; the stems cohering and shorter.

In *D. Labradoricum* the cells are very narrow, the alar well-defined and the leaves less blunt. The allied *D. elongatum* has an excurrent costa and the upper leaf-cells shorter than the lower.

On earth at the mouth of the Illicillewaet Cañon, near Revelstoke, B.C., May 18th, 1890. (*Macoun.*)

- (109.) ***D. fragillifolium***, Lindb. ; Lesq. & James, Mosses of N. America, 73 ; Canadian Musci, No. 41.

On rotten wood, near Lesser Slave Lake, Sept. 20th, 1872 ; also on logs at Hudson Hope, Peace River. Lat. 55° 12'. 1872. (*Macoun.*)

- (110.) ***D. longifolium***, Hedw. ; Lesq. & James, Mosses of N. America, 70 ; Canadian Musci, No. 38 ; Drumm. Musc. Bor.-Am. Nos. 93-94.

Greenland. (*Fl. Gr.*) Miquelon Island. (*Delamare.*) On rocks at Sudbury Junction, and along the north shore of Lake Superior, and common at Lake Nepigon and along the Dawson Route west of Lake

Superior ; on rocks, Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*)
 Crevices of rocks, Elk River, Rocky Mountains. (*Dawson.*) About
 Lake Superior (93), and at Great Bear Lake (94). (*Drummond.*)

(111.) **D. albicans**, Bruch & Schimp. ; Lesq. & James, Mosses of
 N. America, 71 ; Canadian Musci, No. 404.

Crevices of rocks at the summit of the Gold Range, north of Griffin
 Lake, B.C., 1889, alt. 7,000 feet ; on rocks along the Asulkan Glacier,
 Selkirk Mountains, and on rocks by the railway three miles below
 Hector, and at Lake Agnes, Rocky Mountains, 1891. (*Macoun.*)
 Greenland. (*Fl. Gr.*)

(112.) **D. Bonjeani**, De Not. ; Braithw. Brit. Moss-Flora, 149.

D. palustre, Lesq. & James Mosses of N. America, 74 ; Canadian Musci
 No. 409.

In Dow's Swamp, near Ottawa ; "Big Swamp," Murray, and five
 miles north of Colborne, Northumberland Co., Ont. ; swamps, Porcupine
 Mountains, Man. ; wet rocks, North Arm, Burrard Inlet, B.C. ; and in
 wet woods at Victoria, Vancouver Island. (*Macoun.*) Peat bog at
 base of McKay's Mountain, Port Arthur. (*Mrs. E. G. Britton.*)
 Nulato and Sitka. (*Roth. Alask.*) Jakobshavn, Greenland. (*R. Brown.*)

***D. Columbiæ**, Kindb., Bull. Torr. Bot. Club, Vol. XVII., 86.

Cespitose, tomentose and yellowish green. Leaves open-erect,
 undulate above, ovate-lanceolate, obtuse or short-acute, serrate at the
 back and on the borders above ; the uppermost cells oblong, the others
 linear, except the quadrate ones at the angles ; costa narrower, dis-
 appearing below the apex. Capsule solitary, narrow-cylindric, curved,
 striate, pale brown, not strumose, beak as long as the capsule ;
 pedicel yellow. Diœcious.

Differs from the true *D. Bonjeani*, De Not. (*D. palustre*, Schimp.)
 principally in the leaves being blunt, serrate below the middle, the
 costa serrate also below the middle and the capsule without a neck.

Damp woods, by the borders of ponds, Cedar Hill, near Victoria,
 1887 ; and on Campbell Hill, Cache Creek, B.C., alt. 2,500 feet, May
 25th, 1875. (*Macoun.*)

(113.) **D. undulifolium**, C. M. & Kindb. (n. sp.)

Diœcious. Plants robust ; branches thick. Stem sparingly, and
 only the base radiculose, (furnished with rhizoids) 3-4 cm. high. Leaves
 green or golden glossy, faintly undulate, loosely appressed, broad

ovate-lanceolate, nearly entire, acumen generally sub-obtuse; alar cells brown, the others narrow and porose, the uppermost oblong; costa not percurrent, smooth and narrow. Barren. Has often the habit of *Orthothecium chryseum*.

This species could be considered as intermediate between *D. scoparium* and *D. Bergeri*, but differs from both in its peculiar habit and the sparingly radiculose stem.

On earth near Fort Rupert, Vancouver Island, 1885. (*Dawson*.)

(114.) **D. subpalustre**, C. M. & Kindb. (n. sp.)

Differs from the allied *D. Bonjeani* in the leaves being more concave, suddenly narrowed into a long setiform acumen; alar cells dark brown, forming distinct auricles; the outer perichetial leaves long- aristate, the inner obtusate or very short-apiculate and entire. The leaves are faintly undulate and slightly crispate.

On earth on rocks at Hector, Rocky Mountains; on rocks at Deer Park, Lower Arrow Lake, Columbia River, June 18th, 1890. (*Macoun*.)

(115.) **D. Bergeri**, Bland., Musc. fr. exs. III., No. 104 (1804).

D. Schraderi, Web. & Mohr. (1807); Lesq. & James, Mosses of N. America. 75; Canadian Musci, No. 45; Drumm. Musc. Bor.-Am., Nos. 87-88.

D. rugosum, Kindb. & var. *rugulosum*, Kindb., Ottawa Naturalist Vol. IV. 61,

Moist rocky places, not rare, especially about Norway House. (*Drummond*.) Wet woods, Bass River, N.B. (*Fowler's Cat*.) Peat bogs, Jupiter River and Salt Lake, Anticosti; peat bog, Louisburg, Cape Breton; cedar swamps, Hastings and Northumberland Co's., Ont.; Porcupine Mountains, Man.; mountain bogs, Lesser Slave Lake; bogs at Stephen, summit of Rocky Mountains; also in Roger's Pass, Selkirk Mountains. (*Macoun*.) Kotzebue Sound. (*Roth. Alask.*) Godhavn, Greenland. (*Fl. Gr.*) Miquelon Island. (*Delamare*.) Peat bog near London, Ont. (*J. Dearness*.)

(116.) **D. Drummondii**, C. Muell.; Lesq. & James, Mosses of N America, 76; Canadian Musci, No. 47.

D. Starkii, var. *major*, Drumm. Musc. Bor.-Am. No. 84.

D. undulatum, Turn., var., Drumm. Musc. Bor.-Am. No. 86.

Upper Canada in shady woods; very common. (*Drummond*.) Damp woods, Brackley Point, P.E.I.; peat bogs, Sudbury Junction, Hastings Co., and Lake Nepigon, Ont. (*Macoun*.) Woods near London, Ont. (*J. Dearness*.)

Var. **trachyneuron**, Kindb. (n. var.)

Stems shorter. Leaves smaller, narrower and looser, more densely and evidently serrate on the borders, subuliform-cuspidate; alar cells yellow; costa not excurrent, rough also below the middle and upwards.

Cedar swamps at the base of the Oak Hills, Hastings Co., Ont., July 31st, 1871. (*Macoun.*)

- (117.) **D. undulatum**, Turn. ; Lesq. & James, Mosses of N. America, 76; Canadian Musci, No. 48; Drumm. Musc. Bor.-Am. No. 85.

Miquelon Island. (*Delamare.*) Dry woods, on the ground, Bass River, and Grand Lake, N.B. (*Fowler's Cat.*) Beau Lac, Madawaska, and swampy ground, Tobique River, N.B. (*Hay.*) Bogs, Tignish, P.E.I.; common in McKay's Woods, Stewart's Bush, Dow's Swamp and Mer Bleue, Ottawa; in cedar swamps throughout Ontario; North Bay, Lake Nipissing, woods at Lake Nepigon; swamps, Porcupine Mountains, Man.; at Donald, Columbia Valley, and Deer Park, Lower Arrow Lake, Columbia River, B.C.; and at Victoria, Vancouver Island. (*Macoun.*) In woods, Missinaibi River, Ont. (*R. Bell.*) Shady woods; common. (*Drummond.*) Among *Sphagnum*, near London, Ont. (*J. Dearness.*) Nashwaaksis, York Co., N.B. (*J. Moser.*)

- (118.) **D. spurium**, Hedw.; Lesq. & James, Mosses of N. America, 75; Drumm. Musc. Bor.-Am. No. 90; Canadian Musci, No. 46 in part; barren.

About Lake Superior. (*Drummond.*) On rocks, North West Arm, Halifax, N.S.; on metamorphic rocks, Gatineau River at Chelsea, Que., and at Shannonville, Hastings Co., Ont., 1865. (*Macoun.*)

- (119.) **D. brachycaulon**, Kindb. (n. sp.)

D. spurium, Canadian Musci, No. 46, in part.

Allied to *Dicranum spurium*, but differing in the short stem only 1 cm. high, the leaves smaller and shorter, oblong-ovate, acute, not acuminate, entire, not papillose at back, costa elevate, percurrent and smooth, alar cells brown, capsule small, pedicel 1 cm. long. This species is peculiar in its short leaves and the elevate costa.

On dry rocks in open woods near the lighthouse at Yarmouth, N.S., June 23rd, 1883. (*Macoun.*)

- (120.) **D. dipteroneuron**, C. Muell., Beitr. zur Bryol. Nord. Amerikas in Flora 14. (1887.)

Alaska. (*C. Mueller.*)

21. MONOCRANUM, C. Muell.

- (121.)
- M. stenodictyon**
- , Kindb.

Dicranum stenodictyon, Kindb., Bull. Torr. Bot. Club, Vol. XVI. 92.

Plants densely tufted, about 2 cm. high, nearly eradiclese, blackish with straw-yellow tops, in color and habit resembling *Hypnum sarmetosum*. Leaves appressed when dry, not undulate nor crisped, when moist suberect, straight, nearly flat, from an oblong, below narrowed base, short-acuminate obtuse, crenulate, principally above the middle; cells thick-walled, not porose, the outer alar, subquadrate brown-yellow, the inner hyaline, the other cells lanceolate or the upper oblong, the apical sometimes oval; costa simply dentate at the back above, very narrow and only at the base dilated, vanishing in the acumen. Barren.

This peculiar species differs from our *Dicrana* principally in the crenulate not properly serrate leaves, which are also very short; it agrees nearly to *Monocranum dicranoides*, C. Muell., found near Valdivia, in Chili, having a peristome, differing from the dicranoid type in the teeth being entire, not cleft; the leaves are long-acuminate.

On earth in woods west of the Fraser River, on the Telegraph Trail at Quesnel, B.C., June 5th, 1875. (*Macoun.*)

22. DICRANODONTIUM, Bruch & Schimp.

- (122.)
- D. longirostre**
- , Bruch & Schimp.; Lesq. & James, Mosses of N. America, 77.

On rocks at Tay, York Co., N.B. (*J. Moser.*)

23. CAMPYLOPUS, Brid.

- (123.)
- C. Schimperi**
- , Milde.; Braithw. British Moss-Flora, 129.

Greenland. (*Fl. Gr.*)

TRIBE III. FISSIDENTEÆ.

24. FISSIDENS, Hedw.

- (124.)
- F. bryoides**
- , Hedw.; Lesq. & James, Mosses of N. America, 81; Canadian Musci, No. 49.

Dicranum bryoides, Drumm. Musc. Bor.-Am., No. 113.

Near Carlton House; and upon the Rocky Mountains. (*Drummond.*)

On earth at Ottawa, Ont.; on earth west of the Fraser River at the Blackwater Crossing (var. *Hedwigii*, Lamprecht.); on earth at Victoria, Vancouver Island, 1875 (var. *longipes*, Austin.). On earth at Revelstoke, near the Illecillewaet Cañon, B.C. (*Macoun*.)

- (125.) **F. incurvus**, Schwaegr.; Lesq. & James, Mosses of N. America, 82; Canadian Musci, No. 50, in part.

On earth in woods at Owen Sound, Ont.; on earth along a brook, near Victoria, Vancouver Island, 1875. (*Macoun*.) Greenland. (*Fl. Gr.*)

- (126.) **F. tamarindifolius**, Don.; Canadian Musci, No. 410.

Abundant on earth at the roots of trees in woods at Leamy's Lake, near Ottawa; on earth at Owen Sound; in woods at Lac la Nun north-west of Edmonton, N.W.T.; and on the bases of trees by Eagle River at Sicamous, B.C. (*Macoun*.)

- (127.) **F. limbatus**, Sulliv.; Lesq. & James, Mosses of N. America, 82.

On earth, by an old lumber road, at Comox, Vancouver Island, 1887. (*Macoun*.)

- (128.) **F. minutulus**, Sulliv.; Lesq. & James, Mosses of N. America, 85.

Pictou, N.S. (*McKay*.) On stones in channels of small brooks in McKay's Woods, Ottawa; under the "Great Trenton Boulder," Trent valley, four miles above Trenton, and on boulders near Wooler, Ont.; on earth at Comox, Vancouver Island, 1887. (*Macoun*.)

- (129.) **F. exiguus**, Sulliv.; Lesq. & James, Mosses of N. America, 84.

On stones in brooks west of Belleville, Ont., August 7th, 1867; on earth in woods at Revelstoke, west of the Columbia River, B.C., 1890. (*Macoun*.)

- (130.) **F. pusillus**, Wils.; Braithw. British Moss Flora, 68.

F. incurvus, Canadian Musci, No. 50, in part.

Abundant on damp, flat, limestone rocks in woods at Beechwood and McKay's Lake, Ottawa, Ont. (*Macoun*.)

- (131.) **F. osmundoides**, Hedw. ; Lesq. & James, Mosses of N. America, 87 ; Canadian Musci, No. 51.

Dicranum osmundoides, Turn. ; Drumm. Musc. Bor.-Am. No. 112.

Moist turfy situations, near the Rocky Mountains. (*Drummond.*) On peat, Salt Lake, and in woods, Jupiter River, Anticosti ; Pirate's Cove, Straits of Canso, N.S. ; on earth, Falls of Ste. Anne des Monts River, Gaspé, Co., Que. ; roots of trees, Leamy's Lake and Dow's Swamp, Ottawa ; Carleton Place, and near Belleville, Hastings Co., also near Peterboro, and at Owen Sound, Ont. ; in damp woods at Nepigon ; at Hector, Rocky Mountains, and at Sicamous, B.C., 1889. (*Macoun.*) Rough Waters, near Bathurst, N.B. (*Fowler's Cat.*) Greenland. (*Fl. Gr.*)

- (132.) **F. adiantoides**, Hedw. ; Lesq. & James, Mosses of N. America, 88 ; Canadian Musci, No. 52.

Dicranum adiantoides, Drumm. Musc. Bor.-Am., No. 110.

Near the Columbia River, and in Upper Canada. (*Drummond.*) On rocks, St. John N.B. (*Fowler's Cat.*) Near New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Wet rocks, Pictou, N.S. (*McKay.*) Moist places, Montcalm Co., Que. (*D'Urban.*) Boggy soil, Jupiter River, Anticosti ; Pirate's Cove, Straits of Canso, N.S. ; bases of trees at Sudbury Junction, Ont. ; on wet earth, river bank, Comox, Vancouver Island, 1887. (*Macoun.*)

Var. **brachyphyllus**, Kindb. (n. var.) Leaves very short.

On boulders at Belleville, Ont., Oct. 13th, 1888. (*Macoun.*)

- (133.) **F. decipiens**, De Not. ; Lesq. & James, Mosses of N. America, 87 ; Canadian Musci, No. 400.

On rocks in the ravine at Whycocogmah, Cape Breton ; bases of trees Gaspé Co., Que. ; on earth in McKay's Woods, Dow's Swamp, and at Leamy's Lake, near Ottawa ; on logs and old stumps, Hastings Co., and at Brighton, Northumberland Co., Ont. ; on the bases of trees, Kakabeka Falls, Kaministiquia River, west of Lake Superior, 1869 ; on rocks at Owen Sound, Ont. (*Macoun.*)

- (134.) **F. subbasilaris**, Hedw. ; Lesq. & James, Mosses of N. America, 88.

Dicranum subbasilare, Drumm. Musc. Bor.-Am. No. 111.

On trunks of trees in Upper Canada. (*Drummond.*) On cedar trees in a swamp near London, Ont. (*J. Dearness.*)

- (135.) **F. grandifrons**, Brid. ; Lesq. & James, Mosses of N. America, 89 ; Canadian Musci, No. 53.

Abundant below Niagara Falls. (*Lesq. & James.*) Very abundant in the Sydenham River, below Jones Falls, and in the Potawatamie River above and on its falls at Owen Sound ; in a spring at Banff, Alberta, 1891. (*Macoun.*) In Elk River, Rocky Mountains. (*Dawson.*)

25. CONOMITRIUM, Mont.

- (136.) **C. Julianum**, Mont. ; Lesq. & James, Mosses of N. America, 89.

C. Hallianum, Canadian Musci, No. 54.

On stones in a running brook, Elziver Township, North Hastings, Ont., July 12th, 1878. (*Macoun.*)

TRIBE IV. LEUCOBRYÆ.

26. LEUCOBRYUM, Hampe.

- (137.) **L. vulgare**, Hampe. ; Lesq. & James, Mosses of N. America, 90 ; Canadian Musci, No. 55.

Dicranum glaucum, Drumm. Musc. Bor.-Am. No. 89.

Upper Canada. (*Drummond.*) Rocky places, Montcalm Co., Que. (*D'Urban.*) Not rare at Pictou, N.S. (*McKay.*) On earth at Brackley Point, P.E.I. ; damp woods, Straits of Canso, N.S. ; McKay's Woods, and Mer Bleue, near Ottawa ; on hummocks in swamps near Belleville, Hastings Co. ; at Wooler, Northumberland Co. ; above the Whirlpool, Niagara Falls, Ont. (*Macoun.*) In woods, Gananoque, Ont. (*Prof. Fowler.*) Tay, York Co., N.B. (*J. Moser.*) Green Harbor, Newfoundland. (*Rev. A. Waghorne.*) Miquelon Island. (*Delamare.*) Very abundant in woods at London, Ont. (*J. Dearness.*)

TRIBE V. CERATODONTÆ.

27. CERATODON, Brid.

- (138.) **C. purpureus**. Brid. ; Lesq. & James, Mosses of N. America, 92 ; Canadian Musci, No. 56.

Didymodon purpureum, Drumm. Musc. Bor.-Am. No. 116.

Common almost everywhere in burnt woods. (*Drummond.*) Very

common at Pictou, N.S. (*McKay.*) Near St. John, N.B. (*Hay.*) Abundant everywhere in New Brunswick. (*Fowler's Cat.*) River du Loup (*en bas*), Que. (*St Cyr.*) Abundant in all suitable localities from the Atlantic to the Pacific. It prefers roadsides, pastures, old walls, and roofs of houses and dry rocky ground. Collected by every person. (*Macoun.*) Apparently very common in Newfoundland. (*Rev. A. Waghorne.*) Shore of Buffalo Lake, N.W.T. (*J. M. Macoun.*) Kotzebue Sound, Sitka and Nulato. (*Roth. Alask.*) Jakobshavn, Greenland. (*R. Brown.*) Miquelon Island. (*Delimare.*) Tay, York Co. and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) A very common moss by roadsides at London, Ont. (*J. Dearness.*)

Var. **xanthopus**, Sulliv.; Lesq. & James, Mosses of N. America, 92.

On earth and rocks, Johnston's Strait, Gulf of Georgia. (*Dawson.*) Damp rocks near Cadboro Bay, Victoria, Vancouver Island. (*Macoun.*)

(139.) **C. conicus**, (Hampe.) Lindb.; Braithw. British Moss-Flora, 175.

Differs from *C. ¹purpureus* in the long-excurrent costa, the capsule erect and symmetric, faintly sulcate, the lid shorter, the teeth pale, red at base, with fewer articulations. (*Kindberg.*)

On the base of a stump, on the extensive flat at the head of the ravine north of Mr. Murray's Rancho, Spence's Bridge, B.C., May 31st, 1889. (*Macoun.*)

(140.) **C. minor**, Aust.; Lesq. & James, Mosses of N. America, 92.

On damp earth along the Fraser River at Quesnel, B.C., 1875; Mount Tolmie, near Victoria, Vancouver Island, 1887. (*Macoun.*)

28. TRICHODON, Schimp.

(141.) **T. cylindricus**, Schimp.; Lesq. & James, Mosses of N. America, 93; Canadian Musci, No. 411.

Abundant on the borders of ditches at Hastings, B.C.; also at Craigellachie, Eagle Pass, and under the high tressle west of the Columbia at Revelstoke, B.C., 1890. (*Macoun.*)

29. DISTICHUM, Bruch & Schimp.

(142.) **D. capillaceum**, Bruch & Schimp. . Lesq. & James, Mosses of N. America, 93; Canadian Musci, No. 57.

Didymodon capillaceum, Drumm. Musc. Bor.-Am., No. 122.

D. capillaceum var. *foliis brevioribus*, Drumm. Musc. Bor.-Am., No. 123.

Moist banks of rivers frequent, (122); upon "Limestone Rocks,"

about Lake Winnipeg (123). (*Drummond.*) Nottingham Island, Hudson Strait. (*R. Bell.*) Tattagouche Falls, N.B. (*Fowler's Cat.*) Long Rapids, Queen's Co., N.B. (*J. Moser.*) Kakabeka Falls, west of Lake Superior. (*Mrs. E. G. Britton.*) Very abundant in crevices of rocks and earth along the banks of all rocky forest streams throughout Canada. Jupiter River, Anticosti; Madaline River, Gaspé Co., Que.; Niagara Falls, Owen Sound, Port Stanley, Lake Nipissing, Lake Nepigon, and Lake Superior, Ont.; Lake Winnipegosis, Man.; Fort Assiniboine, Athabasca River, N.W.T.; Morley, Banff, Silver City, and Hector, Rocky Mountains; Donald, Columbia Valley, and Roger's Pass, Selkirk Mountains; Revelstoke, Deer Park, and Sproat, Columbia River, B.C.; Mount Benson, Vancouver Island. (*Macoun.*) Mount Queest, Gold Range, B.C., and along the Clearwater River, lat. 57°, N.W.T. (*J. M. Macoun.*) Jakobshavn, Greenland. (*R. Brown.*) Kotzebue Sound and Nulato. (*Roth. Alask.*)

- (143.) **D. inclinatum**, Bruch & Schimp.; Lesq. & James, Mosses of North America, 94; Canadian Musci, No. 58.

Didymodon inclinatum, Drumm. Musc. Bor.-Am., No. 124.

Dead Islands, Labrador. (*J. A. Allen.*) Peat bogs, Salt Lake and Jupiter River, Anticosti; St. Anne des Monts River, Gaspé Co., Que.; crevices of damp rocks, Lake Nepigon; north-east shore of Lake Superior, 25 miles above Michipicoten; on limestone rocks opposite Hudson Hope, Peace River, lat. 56°; wet banks, Morley, and crevices of rocks, Silver City and Hector, Rocky Mountains. (*Macoun.*) Moist alpine situations. (*Drummond.*) Greenland. (*Fl. Gr.*)

- (144.) **D. Macounii**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 490.

Tufts dusky green, radiculose below. Stem 2-3 cm. high. Leaves patent or subfalcate, from a short, suddenly narrowed, sheathing base, entire or with a few small teeth at the apex; cells short subquadrate; costa subpercurrent. Barren.

A very distinct and peculiar species; our other species have very much longer leaves with a long-excurrent costa.

In habit it is like *Leptotrichum flexicaule* var. *densum* growing in very close compact little tufts amongst other mosses on banks subject to inundation. Mouth of the Illicillewaet Cañon, and on left bank of the Columbia at a point of rocks one and a half miles above Revelstoke, B.C., May 18th, 1890. (*Macoun.*)

TRIBE VI. SELIGERIEÆ.

30. SELICERIA, Bruch & Schimp.

- (145.) **S. Donli**, (Sm.) C. Muell.; Braithw. British Moss Flora, 116.

Anodus Donianus, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 96.

Gymnostomum pusillum, (n. sp.) Drumm. Musc. Bor.-Am., No. 22.

Sandstone rocks of Baptiste River, Rocky Mountains. (*Drummond*.)
Under the surface of flat limestone rocks, Owen Sound, Ont. (*Macoun*.)

- (146.) **S. pusilla**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 34; Canadian Musci, No. 59.

On limestone rocks, Gaspé Basin, Que.; under flat limestone rocks in woods north of Aylmer Road, a little beyond Hull, Que. (*Macoun*.)
Kelly's Island, Lake Erie. (*Lesquereux*.)

- (147.) **S. calcarea**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 97.

Weissia calcarea, Drumm. Musc. Bor.-Am., No. 65.

Limestone rocks of Lake Winnipeg. (*Drummond*.) Limestone rocks at Owen Sound, Ont., 1890. (*Macoun*.)

- (148.) **S. recurvata**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 97; Canadian Musci, No. 60, in part.

Abundant on detached limestone rocks at Owen Sound, Ont.; dry cañon near Devil's Lake, Rocky Mountains. (*Macoun*.) Devil's Hole, Niagara, Ont. (*Mrs. Roy*.)

Var. **arcuata**, Lesq. & James, Mosses of N. America, 97.

Weissia Seligeri, Drumm. Musc. Bor.-Am., No. 66.

Sandstone rocks, near the Rocky Mountains. (*Drummond*.)

- (149.) **S. campylopoda**, Kindb. (n. sp.) Canadian Musci, No. 60, in part.

Agrees with *Seligeria recurvata* in the shape of the capsule and the arcuate pedicel, but differs considerably in the leaves being broader, very much shorter, sublinear obtuse, rarely short-acuminate and subacute, and the costa not excurrent, the perichetial leaves ovate-oblong, thin-costate, the peristome darker red. The male flower is fixed on the side of the female.

On damp and shaded limestone rocks at Owen Sound, Ont., Sept. 16th, 1890. (*Macoun*.)

31. BLINDIA, Bruch & Schimp.

- (150.) **B. acuta**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 98; Canadian Musci, No. 61.

Weissia acuta, Hedw.; Drumm. Musc. Bor.-Am., No. 72.

Rocks near the "Height of Land," Rocky Mountains. (*Drum.* New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On rocks at Never's Rapids, Queen's Co., N.B. (*J. Moser.*) On damp rocks, Roger's Pass, Selkirk Mountains, B.C.; and along the Nanaimo River near its mouth, Vancouver Island. (*Macoun.*) Summit of Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Disco, Greenland. (*Fl. Gr.*)

32. CAMPYLOSTELEUM, Bruch & Schimp.

- (151.) **C. saxicola**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 99.

On sandstone boulders, Hunter's River, Prince Edward Island, 1888. (*Macoun.*)

TRIBE VII. POTTIÆ.

33. PHAROMITRIUM, Schimp.

- (152.) **P. subsessile**, Schimp.; Lesq. & James, Mosses of N. America, 100.

Gymnostomum subsessile, Drumm. Musc. Bor.-Am., No. 19.

Plains of the Saskatchewan. (*Drummond.*) On dry earth near Ashcroft, B.C., 1875. (*Macoun.*)

34. POTTIA, Ehrh.

- (153.) **P. cavifolia**, Ehrh.; Lesq. & James, Mosses of N. America, 101.

Gymnostomum ovatum, Drumm. Musc. Bor.-Am., Nos. 17 and 18.

Mountain prairies and plains of the Saskatchewan (17). Rocky Mountains; very rare (18.) (*Drummond.*) On dry earth in crevices of rocks at Lytton, B.C., 1889. (*Macoun.*)

- (154.) **P. truncata**, Fuern.; Lesq. & James, Mosses of N. America, 101; Canadian Musci, No. 62, in part.

On earth in fields, James Terrill's farm, near Wooler, Northumberland Co., Ont. (*Macoun.*)

- (155.) **P. intermedia**, Fuern. ; Braithw. British Moss-Flora, 197.

P. truncata, Canadian Musci, No. 62, in part.

On earth on the Portage between Lesser Slave Lake and Peace River, September 23rd, 1872. (*Macoun.*)

- (156.) **P. littoralis**, Mitt. ; Braithw. British Moss-Flora, 198.

P. truncata, Canadian Musci, No. 62, in part.

On earth at Yale, B.C., May 17th, 1875. (*Macoun.*)

- (157.) **P. Heimii**, Fuern. ; Lesq. & James, Mosses of N. America, 102.

Gymnostomum Heimii, var. I., var. II., var. III., Drumm. Musc. Bor.-Am., Nos. 13, 14 and 15 respectively.

Muddy swamps in the mountains ; rare (No. 13) ; muddy swamps in the mountains (No. 14) ; bank of Hayes River below York Factory, Hudson Bay (No. 15). (*Drummond.*) Greenland. (*Fl. Gr.*)

- (158.) **P. latifolia**, Muell. ; Lesq. & James, Mosses of N. America, 103.

Greenland. (*Fl. Gr.*) On rocks, Mount Alymer, Rocky Mountains, alt. 8,000. (*Macoun.*)

Var. **pillifera**, Muell. ; Lesq. & James, Mosses of N. America, 104.

Weisia latifolia, Drumm. Musc. Bor.-Am., No. 70.

Summits of the mountains ; not uncommon. (*Drummond.*) On earth near Cache Creek, B.C. (*Macoun.*)

- (159.) **P. helmioides**, Kindb. (n. sp.)

Nearly allied to *P. Heimii* but differs in the leaves being shorter, the lower obtuse, the costa sometimes excurrent, the capsule longer and narrower, cylindric, the seta golden yellow, and the peristome present but rudimentary.

The allied *Pottia riparia*, Aust., is described by Lesq. & James as having "a conical mamillate lid, the costa of the leaves vanishing below the apex." These characters do not correspond with the Canadian specimens (No. 719 from Cache Creek, B.C., May 25th, 1875, and Canadian Musci from the Gaspé coast), sent by Prof. Macoun ; they probably belong to another new species.

On earth along Cave Avenue, a little above the Bow River Bridge, National Park, Banff, Rocky Mountains, July 4th, 1891. (*Macoun.*)

35. DIDYMODON, Hedw.

- (160.) **D. rubellus**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 104; Canadian Musci, No. 63.

Weisia curvirostra, Drumm. Musc. Bor.-Am., No. 71.

Very common in the country extending from Canada to the Rocky Mountains. (*Drummond.*) On the ground, Truro, N.S. (*Fowler's Cat.*) On rocks and earth, Tobique River, N.B. (*Hay.*) On rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks, South West Point, Anticosti; rocks at Campbellton, N.B.; on rocks, Truro, N.S.; on damp rocks, Gaspé Co., Que.; on rocks, McKay's woods, Ottawa, at Belleville, Owen Sound, Port Dover and Niagara Falls, Ont.; on rocks at Kakabeka Falls, Kaministiquia River, Lake Superior; on earth, Lake Winnepagoosis, Man.; on rocks, Cypress Hills, Alberta; rocks at Morley, Banff and Hector, Rocky Mountains; at Revelstoke, Deer Park and Sproat. Columbia River; at Spence's Bridge and Lytton, B.C.; and frequent on Vancouver Island. (*Macoun.*) Jakobshavn, Greenland. (*R. Brown.*) Near London, Ont. (*J. Dearness.*)

- (161.) **D. Canadensis**, Kindb. (n. sp.)

Differs from *D. rubellus* principally in the perichetial leaves being thinner, from the ovate base, abruptly attenuate to a short subulate acumen; borders not reflexed; basal cells very long; costa thinner. Diccious.

On perpendicular rocks, head of Lake Louise, Rocky Mountains, Aug. 18th, 1891. (*Macoun.*)

- (162.) **D. luridus**, Hornsch.; Lesq. & James, Mosses of N. America, 104; Canadian Musci, No. 64.

D. trifarium, Drumm. Musc. Bor.-Am., No. 120.

About the Falls of Niagara. (*Drummond.*) Abundant on limestone ledges and great boulders at Jones Falls, near Owen Sound; on limestone boulders below the Clifton House, Niagara Falls; on rocks at Hector, Rocky Mountains. (*Macoun.*)

- (163.) **D. rufus**, Lorentz; Greenland Flora, 384.

Greenland. (*Fl. Gr.*)

- (164.) **D. cylindricus**, (Bruch.) Bruch & Schimp.; Lesq. & James, Mosses of N. America, 105.

On rocks at Wiarton, Bruce Co., Ont. (*Macoun.*) Godhavn, Greenland. (*Fl. Gr.*) Miquelon Island. (*Delamare.*)

36. LEPTODONTIUM, Hampe.

- (165.) **L. Canadense**, Kindb. (n. sp.)

Tufts loosely cohering, nearly without rhizoides, dark green, blackish below. Stem about 1 cm. high, nearly simple. Leaves squarrose, flexuose, undulate and not recurved at the borders, when dry curled-sublingulate, acute, entire below the middle, coarsely and unequally serrate above, not margined; lower basal cells rectangular and subpellucid, the upper at the middle quadrate, the uppermost rotundate, slightly papillose; costa finally brown, short excurrent. Dioecious; only female plants found.

In this species the leaves are larger than in the European species. It is peculiar that this genus has not been represented before in the North American Moss-Flora.

On stones in the Sydenham River below Jones Falls, Owen Sound, Ont., Sept. 17th, 1890. (*Macoun.*)

37. LEPTOTRICHUM, Hampe.

- (166.) **L. tortile**, Muell.; Lesq. & James, Mosses of N. America, 105; Canadian Musci, No. 65.

Didymodon tortile, Drumm. Musc. Bor.-Am., No. 118.

Portage between Fort William and Rainy Lake, west of Lake Superior. (*Drummond.*) Growing on clay, Nipisiquit Falls, Kent Co., N.B. (*Fowler's Cat.*) Nottingham Island, Hudson Strait. (*R. Bell.*) On earth at Truro, N.S. (*Macoun.*) On earth at Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Pictou, N.S. (*McKay.*)

- (167.) **L. vaginans**, Lesq. & James, Mosses of N. America, 106; Canadian Musci, No. 386.

On earth by roadsides, Brackley Point, Prince Edward Island. (*Macoun.*) On roadsides, Kent Co., N.B. (*Fowler's Cat.*)

- (168.) **L. homomallum**, Hampe ; Lesq. & James, Mosses of N. America, 107.

Didymodon heteromallum, Drumm. Musc. Bor.-Am., No. 119.

On earth by the torrent that enters Kicking Horse Lake by the station at Hector, Rocky Mountains, 1890. (*Macoun.*) West side of Rocky Mountains ; sparingly. (*Drummond.*)

- (169.) **L. flexicaule**, Hampe ; Lesq. & James, Mosses of N. America, 107 ; Canadian Musci, No. 66.

Didymodon flexicaule, Drumm. Musc. Bor.-Am., Nos. 125-126.

Alpine woods and banks ; about Lac de Bois, Rocky Mountains. (*Drummond.*) Twelve-mile Pool, Jupiter River, and Salt Lake, Anticosti ; in a ravine at Whyecocogmah, Cape Breton ; on rocks at the mouth of Peace River Cañon, lat. 56° ; abundant on wet rocks by the torrent at Hector and at Banff, Rocky Mountains ; on rocks, Lake Mara, at Sicamous, B.C. ; abundant on rocks along the Columbia River, above Revelstoke, also at Deer Park on Lower Arrow Lake, B.C. (*Macoun.*) Jakobshavn, Greenland. (*F. Gr.*)

***L. brevifolium**, Kindb., n. subsp.

Leaves very small, from the ovate-oblong base contracted to a shorter point ; costa not excurrent. This form is perhaps a distinct and proper species ; the tufts are quite barren.

On rocks in the "Dry Cañon" near the discharge of Devil's Lake, National Park, Rocky Mountains, Aug. 10th, 1891. (*Macoun.*)

Var. **densum**, Schimp. ; Canadian Musci, No. 461.

On rocks at Morley, Banff and Hector, Rocky Mountains ; on damp earth along the Columbia River at Donald and Revelstoke, B.C. (*Macoun.*)

- (170.) **L. pallidum**, Hampe ; Lesq. & James, Mosses of N. America, 107 ; Canadian Musci, No. 67.

On the ground in woods west of Belleville ; in woods near Bismarck, and at Leamington, Ont. (*Macoun.*)

- (171.) **L. glaucescens**, Hampe ; Lesq. & James, Mosses of N. America, 108 ; Canadian Musci, No. 68.

Didymodon glaucescens, Drumm. Musc. Bor.-Am., No. 117.

Upon the shores of Lake Superior, and near York Factory, Hudson

Bay. (*Drummond.*) Bank of St. Anne des Monts River, Gaspé Co., and crevices of rocks along the Gatineau, at Kirk's Ferry and at Leamy's Lake, near Hull, Que.; on the shores of Oak Hills Pond, Hastings Co., and by the shores of many others in the same county; shore of Lake Nipissing, Ont.; on the bank of a brook at Sicamous, B.C. (*Macoun.*) Near the summit of Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Godhavn, Greenland. (*Fl. Gr.*)

38. TRICHOSTOMUM, Smith.

(172.) **T. tophaceum**, Brid.; Lesq. & James, Mosses of N. America, 109.

Owen Sound, Ontario. (*Mrs. Roy.*) Niagara Falls. (*Olney.*) On calcareous rocks, Hudson Hope, Peace River, lat. 56°, 1872; on earth in fields near Wooler, Ont. (*Macoun.*)

39. DESMATODON, Brid.

(173.) **D. latifolius**, Brid.; Lesq. & James, Mosses of N. America, 111; Canadian Musci, No. 69, in part.

Dicranum latifolium, Drum. Musc. Bor.-Am., No. 109.

Moist marshy places and banks of rivers amongst the Rocky Mountains. (*Drummond.*) On earth at Edmonton, N.W.T.; not rare on earth on the Rocky Mountains in the National Park at Banff; Blackwater River, and mountains north of Griffin Lake, B.C. (*Macoun.*) Summit of Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Christianshaab, Greenland. (*Fl. Gr.*)

(174.) **D. Systylius**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 111; Canadian Musci, No. 71, in part.

Moist, marshy places, among the Rocky Mountains. (*Drummond.*) On earth, Boggy Creek, Manitoba, 1872. (*Macoun.*) Disco, Greenland. (*Fl. Gr.*)

(175.) **D. Porteri**, James; Lesq. & James, Mosses of N. America, 112; Canadian Musci, No. 70.

On rocks along the Gaspé coast, 1882; also at the bases of trees on stones, extremity of Pelée Point, Lake Erie. (*Macoun.*) Niagara Falls. (*G. W. Clinton.*)

- (176.) **D. obtusifolius**, Schimp.; Lesq. & James, Mosses of N. America, 114.

Didymodon oblongifolium, (n. sp.) Drumm. Musc. Bor.-Am., No. 114.

D. latifolium, Drumm. Musc. Bor.-Am., No. 115.

Mountain-rocks; often on the under side of projecting ledges and moist marshy places, Rocky Mountains. (*Drummond.*)

- (177.) **D. subtorquescens**, C. M. & Kindb. (n. sp.)

D. latifolius, Canadian Musci, No. 69, in part.

Nearly allied to *D. atrovirens*, Smith, (*D. nervosus*, Bruch & Schimp. and Lesq. & James), but the tufts are compact, the stem higher, (about 1 cm.), the leaves green, not dingy, very short, suboval or subspathulate, smaller, less opaque, the costa neither excurrent nor broader above, the capsule cylindric.

The description of *D. nervosus* by Lesq. & James corresponds nearly to our species, but not to the true European.

On earth on exposed cliffs along the Gaspé coast above the Madeline River, 10th August, 1882. (*Macoun.*)

- (178.) **D. cernuus**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 114; Canadian Musci, No. 71.

On earth, South West Point, Anticosti; on earth at Campbellton, N.B.; on rocks and cliffs along the Gaspé coast; on earth along the Pembina River, northwest of Edmonton, N.W.T.; Cliche Creek Mountain, and on wet rocks in a ravine at Kamloops, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*)

Var. **xanthopus**, Kindb. (n. var.)

Leaves less chlorophyllose, costa virescent. Capsule larger; teeth more united; pedicel yellow.

On black earth at the crossing of Boggy Creek on the "Old Trail" leading to Touchwood Hills, Manitoba, 12th August, 1872. (*Macoun.*)

- (179.) **D. camptothecius**, Kindb. (n. sp.)

Habit of *Desmatodon cernuus*. Plants densely caespitose. Leaves long, narrow-lingulate, subobtuse, entire or obscurely crenulate, faintly papillose, marginate and at the base revolute, mucronate by the excurrent greenish costa. Capsule cylindric, arcuate: teeth short, cut in 2 or 4 partly coherent segments; annulus indistinct; lid with a short

oblique beak ; pedicel flexuous, reddish-yellow, 10-12 mm. long ; spores, large, about 0.04 mm.

Along the Gaspé coast on rocks close to the sea, August 12th, 1882. (*Macoun.*)

- (180.) **D. obliquus**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 115.

Tortula suberecta, (n. sp.) Drumm. Musc. Bor.-Am., No. 145.

Shady alpine places, upon the borders of a stream among the Rocky Mountains. (*Drummond.*) Sabine Island, Greenland. (*Fl. Gr.*)

- (181.) **D. Laureri**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 115.

Tortula bryoides, (n. sp.) Drumm. Musc. Bor.-Am., No. 135.

Upon the ground ; on the summit of a hill in the Rocky Mountains, (*Drummond.*) On earth along a ditch near Victoria, Vancouver Island, 1875. (*Macoun.*) Shannon Island, Greenland. (*Fl. Gr.*)

40. LEPTO BARBULA, Schimp.

- (182.) **L. berica**, (DeNot.), Schimp. Syn. ed. 2, p. 181.

Trichostomum tenue, Lesq. & James, 106, vide Limpricht, 596.

Leptotrichum tenue, C. Muell. Syn. Musc. I. 447 ; Canadian Musci, No. 486.

On earth close to the railway track at Revelstoke, B.C., May 23rd, 1890. (*Macoun.*)

41. BARBULA, Hedw.

(a.) **Aloina**. **C. Muell.** (Kindb., as genus proper.)

- (183.) **B. rigida**, Schultz. ; Lesq. & James, Mosses of N. America, 116.

On earth at Niagara Falls, 15th June, 1884. (*Macoun.*)

- (184.) **B. ambigua**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 116.

On the Fraser River alluvium, at Quesnel, B.C., 31st May, 1875 ; on earth in Peace River Cañon, lat. 56°. (*Macoun.*)

- (185.) **B. brevirostris**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 115; Canadian Musci, No. 72.

Tortula brevirostris, Drumm. Musc. Bor.-Am., No. 136.

Clay banks among the Rocky Mountains and at York Factory, Hudson Bay. (*Drummond.*) On earth at Morley, foot-hills of Rocky Mountains, 13th June, 1885; on earth along Cave Avenue, Banff, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (186.) **B. macrorhyncha**, Kindb. (n. sp.)

Habit of *Barbula brevirostris*. Leaves round-ovate, obtuse, involute all around, also at the apex; costa not excurrent. Capsule oblong-ovoid; annulus revolute; teeth long, twisted at least twice, beak of the lid more than $\frac{2}{3}$ length of capsule; pedicel pale red or yellowish. Dioecious. Calyptra unknown.

Differs from *Barbula rigida* in the very much shorter leaves and the longer lid.

On earth, Hastings Road, Tudor, North Hastings, Ont., August 16th, 1874. (*Macoun.*)

(c.) **Tortella, C. Muell.**

- (187.) **B. tortuosa**, Web. & Mohr; Lesq. & James, Mosses of N. America, 120; Canadian Musci, No. 77.

Tortula tortuosa, Drumm. Musc. Bor.-Am., No. 141.

Rocks at Lake Winnipeg; and amongst the Rocky Mountains, &c. (*Drummond.*) On rocks, Bass River, Kent Co., N.B. (*Fowler's Cat.*) On rocks, Queen's Co., N.B. (*J. Moser.*) On stones, Tobique River, N.B. (*Hay.*) On rocks Ste. Anne's River and Mount Albert, Gaspé Co., Que.; on rocks in McKay's Woods at Ottawa; common on rocks at Shannonville, Belleville, Owen Sound and Lake Nipigon, Ont.; Jupiter River, Anticosti; on rocks at Hector and Banff, Rocky Mountains; at Revelstoke, Deer Park and Sproat on the Columbia River; Fort St. James, Northern British Columbia; Mount Arrowsmith, Vancouver Island. (*Macoun.*) Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) On rocks, Newfoundland. (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*) Miquelon Island. (*Delàmare.*)

- (188.) **B. inclinata**, C. M. & Kindb. (n. sp.) Canadian Musci, No. 512.

Dioecious. Tufts laxly coherent, yellowish green. Stem indistinct, or 0.5 cm. high, not branching. Leaves cirrulate-criped and rigid

when dry, suberect and nearly straight when moist, not undulate, from a thin ovate-oblong base attenuate, nearly sublinear, acute or suddenly pointed, very papillose; margins involute, cucullate above; costa yellow pellucid, excurrent in an often denticulate point. Perichetial leaves much broader and longer than the other, whitish, from a long lanceolate base subulate; cells narrow, linear also above. Capsule narrow-cylindric, nearly straight, suberect; peristome long, several times convolute.

This species resembles rather the European *Barbula inclinata* (Hedw. f.) than *B. tortuosa*, which has a larger capsule, longer leaves, taller stems, &c.

On earth and gravel on bars along old channels of the Illicillewaet, near Revelstoke, B.C.; fruiting abundantly, May 27th, 1890. (*Macoun.*)

- (189.) **B. fragilis**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 129; Canadian Musci, No. 78.

Tortula tortuosa, var. *inclinata*, Drumm. Musc. Bor.-Am., No. 142.

Didymodon fragile, (n. sp.), Drumm. Musc. Bor.-Am., No. 127.

Dry mountain prairies; upon the "Height of Land" in the Rocky Mountains (142); margins of alpine lakes; fruit very rare (127). (*Drummond.*) River du Loup (*en bas*) Que. (*St. Cyr.*) Rocks along the bed of Ste. Anne des Monts River, at the base of Mount Albert, Gaspé Co., Que.; abundant on the borders of marshy streams at Hector and Banff, Rocky Mountains; fruit very scarce. (*Macoun.*) North Shore of Lake Superior. (*Agassiz.*) Disco, Greenland. (*Fl. Gr.*)

- (190.) **B. caespitosa**, Schwaegr.; Lesq. & James, Mosses of N. America, 129.

On earth at the base of trees in woods at Belleville, and near the "Big Swamp" Murray, and in Seymour West, Northumberland Co., Ont.; roots of trees, North Bay, Lake Nipissing. (*Macoun.*)

(d.) **EUBARBULA, C. Muell.**

- (191.) **B. Vahlana**, Schultz; Lesq. & James, Mosses of N. America, 117.

On earth at Yale, B.C., May 17th, 1875. (*Macoun.*)

- (192.) **B. amplexa**, Lesq.; Lesq. & James, Mosses of N. America, 118.

Tortula humilis, Drumm. Musc. Bor.-Am., No. 137.

Limestone rocks of Lake Winnipeg. (*Drummond.*)

(193.) **B. carnifolia**, C. M. & Kindb. (n. sp.)

Stem very short, 2-3 mm. high. Leaves lingulate, not margined, blunt; margins recurved below and above the middle at one side; cells finally sub-pellucid, the upper sub-quadrate, also the median, the lower basal near the costa large, rectangular and hyaline, the marginal shorter and narrower, costa red, thick, and sub-percurrent or rarely short excurrent. Inner perichetial leaves smaller and shorter. Capsule longer than the straight lid; pedicel about 1.5 cm. long. Probably dioecious.

(194.) **B. subcarnifolia**, C. M. & Kindb. (n. sp.)

Smaller than *B. carnifolia*, differing principally in the leaves being short, suboblong, short-apiculate, the upper pellucid at the flat margins, the costa green. Probably monœcious.

Differs from *B. amplexa* in the capsule being longer than the oblique lid.

On earth at the base of trees, Pelee Island, Lake Erie, 13th June, 1882. (*Macoun.*)

(e.) **SENOPHYLLUM**, C. Muell.(195.) **B. platyneura**, C. M. & Kindb. (n. sp.)

Dioecious. Tufts compact subpulvinate, light brown. Stem scarcely 1 cm. high. Leaves suberect, when dry imbricate and contorted, short, ovate or ovate-oblong, subacute, papillose; margins strongly revolute; basal cells short-rectangular, the other subquadrate; costa thick, short excurrent or percurrent. Barren.

Nearly allied to the European *B. revoluta*, Schrad., but clearly distinct in the always shorter, and less obtuse leaves.

On dry rocks at the Deer Park, Lower Arrow Lake, Columbia River, B.C., June 11th, 1890. (*Macoun.*)

(196.) **B. (Trichostomum) nitidum**, (Lindb.) Jur.

On wet earth at Hector, Rocky Mountains, August 14th, 1890. (*Macoun.*)

(197.) **B. gracilis**, Schwaegr.; Lesq. & James, Mosses of N. America, 127.

On sandstone rocks along the Peace River, below Dunvegan, and within the Rocky Mountains along that river, lat. 56° 12'. (*Macoun.*)

(198.) **B. subgracilis**, C. M. & Kindb. (n. sp.)

Densely tufted. Plants small, about 0.6 cm. high, green above, red-brown below, nearly simple. Leaves when dry suberispate, when moistened squarrose, curved from the ovate base, narrow, long-subulate, nearly smooth; borders reflexed nearly all around; lower basal cells rectangular, more pellucid than the other; costa reddish, percurrent or short-excurrent. Inner perichetial leaves broad, blunt with a long-excurrent costa, the other acuminate, all faintly crenulate. Capsule oblong-cylindric, red-brown, longer than the subulate oblique beak; pedicel red. Dioecious. Allied to *Barbula gracilis*.

On rocks at Yale, B.C., May 17th, 1889. (Macoun.)

(199.) **B. subicmadophila**, C. M. & Kindb. (n. sp.)

B. gracilis, var. *squarrosula*, Kindb., Bull. Torr. Bot. Club, Vol. XVII. 89.

Laxly tufted. Plants about 1 cm. high, pale brown, nearly simple. Leaves when dry loosely appressed, when moistened subquarrose or patent, nearly straight, short, ovate-lanceolate acute, faintly papillose; borders slightly reflexed at the base, inflexed at the upper part, papillose-crenulate; cells nearly uniform, roundish or subquadrate, the apical often larger and pellucid; costa pale, percurrent. Perichetial leaves from a short ovate base long-acuminate sublinear; costa dark-brown, long-excurrent, filling nearly the whole acumen. Capsule oblong-cylindric, finally blackish; pedicel dark-brown. Dioecious.

Habit of *Barbula fallax* or *B. gracilis*, but differing at once in the leaf-borders being scarcely reflexed. In the European *Barbula icmadophila*, Bryol., Europ., the leaves are smooth, and the upper furnished with a long-excurrent costa.

On dry rocks, but which are covered at high water, at Yale, B.C., May 17th, 1875. (Macoun.)

(200.) **B. fallax**, Hedw.; Lesq. & James, Mosses of N. America, 121.

Tortula fallax, Drumm. Musc. Bor.-Am. No. 139.

Dicranum pellucidum, Drumm. Musc. Bor.-Am., No. 108.

Banks of rivers near the Rocky Mountains; apparently rare. Rocks of Portage River near the Columbia River. (Drummond.) Bass River, Kent Co., N.B. (Fowler's Cat.) On earth at Owen Sound, Ont., 1874; on earth at the base of trees, Comox, Vancouver Island; on sand along Ste. Anne des Monts River, Gaspé, Que. (Macoun.) Jakobshavn, Greenland. (R. Brown.)

- (201.) **B. recurvifolia**, Schimp. ; Lesq. & James, Mosses of N. America, 122.

On rocks near Lake La Mab, North Hastings, Ont., 15th August, 1874. (Macoun.) Niagara Falls. (Austin.)

- (202.) **B. sparsidens**, C. M. & Kindb. (n. sp.)

Loosely tufted. Plants small, 0.5-1 cm. high, green above, ferrugineous below, nearly simple. Leaves small, when dry incurved, when moistened subquarrose, arcuate, ovate-lanceolate, distinctly papillose; borders reflexed nearly all around; lower basal cells rectangular, hyaline; costa pale, rough at back, percurrent. Inner perichetial leaves shorter than the outer; costa not or very short-excurrent. Capsule small, oblong-cylindric, reddish, longer than the oblique beak; peristome and pedicel red. Dioecious. Allied to *Barbula fallax*, but differing principally in the peristomial teeth, spreading, loosely and not spirally twisted.

On earth along the west side of the Columbia River, at Revelstoke, B.C., May 3rd, 1890. (Macoun.)

- (203.) **B. melanocarpa**, C. M. & Kindb. (n. sp.)

Laxly tufted. Fertile stem nearly simple, about $\frac{1}{2}$ cm. high, the barren branching, doubly higher. Leaves when dry appressed, not twisted, when moistened open, olive-green, short ovate-lanceolate acute, slightly papillose; borders reflexed below the middle; cells nearly uniform, roundish or subquadrate; costa brown, short-excurrent. Perichetial leaves from the ovate-oblong base long-acuminate, costa filling the whole linear acumen. Capsule oblong-cylindric straight, finally blackish, obliquely short-beaked; annulus not distinct; pedicel red. Dioecious. Allied to *Barbula subicmadophila*.

On rocks along the Fraser, close to the water at Yale, B.C., May 18th, 1887. (Macoun.)

- (204.) **B. rigidula**, Schimp. ; Lesq. & James, Mosses of N. America, 123.

Didymodon rigidulum Drumm. Musc. Bor.-Am., 121.

On rocks amongst the Rocky Mountains; rare. (Drummond.) On the roots of trees close to the water, west side of Colpoy's Bay, Georgian Bay, Lake Huron; and on earth at Owen Sound, Ont. (Macoun.) Greenland. (Fl. Gr.)

- (205.) **B. spadicea**, Mitt. ; Braithw. British Moss-Flora, 266.

B. rigidula, Canadian Musci, No. 412.

Differing from *B. rigidula* in the leaves being more curved, and broader pointed, the costa distinct to the apex; from *B. fallax* in the scarcely twisted peristome. On earth by a brook at Lytton, B.C., April 17th, 1889. (*Macoun.*)

- (206.) **B. unguiculata**, Hedw. ; Lesq. & James, Mosses of N. America, 120 ; Canadian Musci, No. 73.

Tortula unguiculata, Drumm. Musc. Bor.-Am., No. 140.

In Upper Canada ; and about Carlton House, &c. (*Drummond.*) Common on earth at Bass River, Kent Co., N.B. (*Fowler's Cat.*) Pictou, N.S. (*McKay.*) Tay, York Co. and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Very common on the borders of old roads in and around Ottawa, Belleville and Owen Sound, Ont. ; on earth along old roads at Revelstoke on the Columbia River, and at Cache Creek, B.C. (*Macoun.*) Very common in sandy soil at London, Ont (*J. Dearness.*)

- (207.) **B. brachyphylla**, Sulliv. Var. **angustifolia**, Kindb (n. var.)

On calcareous rocks where water drips in spring, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 8th, 1890. (*Macoun.*)

- (208.) **B. (Didymodon) ? cœnea**, C. M. & Kindb. (n. sp.)

Dioecious. Tufts loose, purple, without rhizoids. Stems about 1 cm. high, branches not divided. Leaves nearly straight, loosely appressed when dry, patent when moist, short ovate-lanceolate attenuate, acute, papillose ; margins faintly revolute at the base, also above at least on one side ; costa red, subpercurrent ; basal cells rectangular pellucid, the other subquadrate, dusky. Barren.

Nearly allied to the European (also occurring in Greenland) *Barbula (Didymodon) rufa*, Lor., which has the branches divided and the leaves brown-red with a different areolation.

On earth subject to inundation one and a half miles above Revelstoke, along the Columbia River, B.C., May 12th, 1890. (*Macoun.*)

- (209.) **B. rubiginosa**, Mitt. ; Lesq. & James, Mosses of N. America, 126.

North West Coast. (*Douglas.*) I believe Douglas' specimens to be *B. robustifolia*, C. M. & Kindb. (*Macoun.*)

- (210.) **B. cylindrica**, Schimp. ; Lesq. & James, Mosses of N. America, 125 ; Canadian Musci, No. 81, in part.

On rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 11th, 1890 ; on damp rocks at Spence's Bridge, Yale, and Agassiz, B.C. ; also wet rocks, Cadboro Bay, Vancouver Island. (*Macoun.*)

- (211.) **B. robustifolia**, C. M. & Kindb. (n. sp.)

Barbula rubiginosa, Canadian Musci, No. 75.

Very nearly allied to *Barbula tortellifolia*. Differs in the dark brown or olive-green color of the whole plant, the leaves being more crowded, shorter with an ovate-oblong base, borders reflexed nearly to the middle at one side, upper cells larger and sub-pellucid, the basal ones hyaline subquadrate, costa thicker and not excurrent, linear and distinct to the apex. Barren.

Abundant on rocks at Cedar Hill and other localities near Victoria ; also on rocks on Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. First collected at Victoria, May 5th, 1875, and then named *B. rubiginosa* by Austin. (*Macoun.*)

- (212.) **B. tortellifolia**, C. M. & Kindb. (n. sp.)

Barbula cylindrica, Canadian Musci, No. 81, in part.

B. flexifolia, Canadian Musci, No. 399.

This species very much resembles *Barbula horridifolia* in its habit but is found in a well-fruited state. It is generally more robust, often 4-5 cm. high and finally sometimes quite red. The stem is more divided, the leaves broader, less distinctly decurrent, the comal ones larger and crowded, short-pointed by the excurrent costa ; the perichetial ones suddenly attenuate to a long narrow acumen, but the costa is faintly excurrent. The capsule is large sub-cylindric, reddish doubly longer than the beak ; peristome long, once loosely ~~encompassing~~ whitish. Dioecious.

On wet rocks on the North Arm, Burrard Inlet, ~~by the sea~~, Telegraph Bay, near Victoria, Vancouver Island, also on rocks by the sea, Vesuvius Bay, Salt Spring Island, Gulf of Georgia, B.C. (*Macoun.*)

- (213.) **B. circinnatula**, C. M. & Kindb. (n. sp.)

Nearly allied to *Barbula cylindrica* or rather intermediate between *Barbula elata* and *B. virescens*. Differs in the upper leaves being green, circinnate-twisted in the dry state, the peristome paler and the annulus simple ; the areolation of the leaves is also more distinct.

On earth on rocks along the railway a mile east of Agassiz, B.C., May 8th, 1889. (*Macoun.*)

(214.) **B. horridifolia**, C. M. & Kindb. (n. sp.)

Densely tufted. Plants about 3 cm. high, green above, rusty-red below, more or less branching. Leaves dry irregularly crispate, when moistened falcate, spreading at all sides, very long and narrow, ovate-lanceolate, carinate above, loosely disposed and long-decurrent, nearly smooth; borders reflexed at the ovate base; basal cells pellucid, short-rectangular, the inner larger; upper cells small and obscure; costa red-brown, broader below, narrower above, vanishing in the apex. Barren.

This species is allied to *Barbula cylindrica* (Tayl.) Lindb., but differs principally in the decurrent leaves and the attenuate costa.

On damp rocks, near the whirlpool, west of the Columbia River, at Revelstoke, B.C., May 9th, 1890. (*Macoun.*)

(215.) **B. convoluta**, Hedw.; Lesq. & James, Mosses of N. America, 127; Canadian Musci, No. 76.

Tortula convoluta, Drumm. Musc. Bor.-Am., No. 138.

Sandy soil in the country extending from Canada to the Rocky Mountains. (*Drummond.*) On pasture fields and by roadsides at Ottawa, Carlton Place, Belleville, Niagara Falls and Owen Sound, Ont.; on earth at Victoria and Comox, Vancouver Island. (*Macoun.*) On earth, very common at London, Ont. (*J. Dearness.*)

(216.) **B. chrysopoda**, C. M. & Kindb. (n. sp.)

Differs from *Barbula convoluta* in the short nearly indistinct stem, the leaves sub-lingulate, very obtuse, the perichetial leaves rounded or truncate at the apex, long exserted, the lid spirally contorted.

On earth in the burnt woods around Revelstoke; especially along old roads, May 17th, 1890. (*Macoun.*)

(f.) **SYNTRICHIA**, C. Muell.

(217.) **B. subulata**, Beauv.; Lesq. & James, Mosses of N. America, 130.

Tortula subulata, Drumm. Musc. Bor.-Am., No. 144.

In the country from Canada to the Rocky Mountains; upon the ground. (*Drummond.*) On earth in the country north of Edmonton, N.W.T.; on earth along the Fraser River, below Lytton, B.C.; and on rocks, Point Wilkins, Lake Winnipegosis, Man. (*Macoun.*)

Var. **longifolia**, Kindb., Bull. Torr. Bot. Club, Vol. XVII., 89.

Intermediate between *B. subulata* and *B. angustata*. Leaves long and narrow, acuminate and acute, distinctly denticulate above, papillose, yellow, bordered; costa long-excurrent, but shorter in the perichetial leaves.

On earth, Cypress Hills, Alberta; on earth at C  che Creek, Yale and Lytton, B.C.; vicinity of Victoria, Vancouver Island, May 7th, 1875. (*Macoun.*)

(218.) **B. mucronifolia**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 131; Canadian Musci, No. 80.

On rocks at Truro, N.S. (*Fowler's Cat.*) On calcareous earth, Jupiter River, Anticosti; crevices of limestone rocks at Belleville, Ont. (*Macoun.*) Sandy banks of the St. Lawrence at Fox River, Gasp   Co., Que. (*J. A. Allen.*) Jakobshavn, Greenland. (*Fl. Gr.*)

(219.) **B. angustata**, Wils.; Braithw. British Moss-Flora, 221; Canadian Musci, No. 413.

B. subulata, Beauv. var. *angustata*, Schimp.; Lesq. & James, Mosses of N. America, 131.

Resembling *B. subulata*, but more slender. Leaves narrowly ovate-lanceolate, acute, nearly smooth, margin incrassate, hyaline. Capsule paler, suberect, narrowly cylindric. On sandy soil near London, Ont. (*J. Dearness.*) On sand at the extreme end of Pelee Point, Lake Erie; on rocks at Morley, Rocky Mountains; on earth at Lytton, Spence's Bridge and Agassiz, B.C. (*Macoun.*)

(220.) **B. ruralis**, Hedw.; Lesq. & James, Mosses of N. America, 132; Canadian Musci, No. 82.

Tortula ruralis, Drumm. Musc. Bor.-Am., No. 143.

Various parts of the country; scarcely common. (*Drummond.*) On limestone rocks at Ottawa, Belleville, Owen Sound and Niagara Falls; also at Flat Rock Portage, Lake Nepigon; on rocks near Victoria, Vancouver Island; dry rocks, Kananaskis Station, Rocky Mountains. (*Macoun.*) Smith's Sound, between lat. 78  -82  . (*D. Hayes.*) Shannon Island, Greenland. (*Fl. Gr.*)

(221.) **B. alpina**, Bruch & Schimp.

On rocks, at Quesnel, E.C., May 29th, 1875. (*Macoun.*)

- (222.) **B. aciphylla**, Bruch & Schimp. ; Canadian Musci, No. 479.

On rock, Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) On rocks, mountains north of Griffin Lake, Gold Range, B.C. ; dry rocks at Hector, Rocky Mountains, and in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Disco Island, Greenland. (*Fl. Gr.*)

- (223.) **B. megalocarpa**, Kindb. Bull. Torr. Bot. Club, XVI. 92 ; Canadian Musci, No. 79.

Allied to *B. ruralis*, but differs in the capsule being very much longer and cylindrical, at least twice the length of the conic operculum, the peristome shorter than the tubulose base and calyptra very much prolonged below the capsule, the middle leaves more distant, the upper leaves subacute not emarginate or rounded at the apex, and rather acute ; the hair-point is red at the base, and the leaf-base narrowly or not margined, with pale-yellow cells.

On rocks, Cypress Hills, Alberta ; common on rocks at Revelstoke on the Columbia River, at Deer Park, Lower Arrow Lake, and Sproat at Pass Creek ; on rocks at Sicamous and Yale, B.C. ; very common on rocks at Victoria, Comox and other places on Vancouver Island. (*Macoun.*) It exists also as a variety with a smaller capsule.

- (224.) **B. lævipila**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 132.

Vancouver Island. (*Lyall.*) May this not be *B. lato-excisa*, C. M. & Kindb. ? (*Macoun.*)

- (225.) **B. brachyanguia**, C. M. & Kindb. (n. sp.)

Dioecious. Plants brown-ferruginous, 2-3 cm. high. Leaves small, the upper close, curved, short ovate-oblong, obtuse or subacute, the upper part scarcely longer than the sheathing base ; margins slightly recurved in the middle ; broad cells hyaline, nearly uniform ; costa rough at back ; hairpoint long, denticulate, the greater part pale red. Capsule small and short, oblong-cylindric, sub-symmetric ; pedicel red 1.5-2 cm. long.

This species is very distinct from *Barbula ruralis* in the short, nearly flat leaves, the hyaline leaf-base, and the small capsule.

On rocks along Beccie River, Anticosti, September 3rd, 1883. Has been included in *B. ruralis*. (*Macoun.*)

(226.) **B. lato-exclisa**, C. M. & Kindb. (n. sp.)

B. levipila, Canadian Musci, No. 74, in part.

Differs from *Barbula leptotricha* in the leaves being green, nearly flat at the borders; the outer basal cells faintly chlorophyllose, narrowly marginate.

On the bases of trees, on Mount Tolmie, near Victoria, Vancouver Island, May 20th, 1887. (*Macoun.*)

(227.) **B. papillinervis**, C. M. & Kindb. MS. (n. sp.)

Allied to *B. ruralis*. Upper leaves subacute, leaf-base narrowly margined, with pale-yellow cells; calyptra very much prolonged below the capsule.

On rocks at C  che Creek, B.C., May 25th, 1875; also on dry rocks at Revelstoke, Columbia River, B.C., 1890; on rocks west side of Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

(228.) **B. leptotricha**, C. M. & Kindb. (n. sp.)

Differs from *Barbula ruralis*, principally in the shorter leaves, emarginate at the apex, with a fine and nearly smooth hair-point; the basal cells hyaline.

On limestone rocks, Point Wilkins, Lake Winnipegosis, Manitoba, July 16th, 1881. (*Macoun.*)

(229.) **B. (Syntrichia ?) rotundo-emarginata**, C. M. & Kindb. (n. sp.)

Dioecious. Plants loosely tufted, brown, about 1 cm. high. Stem beset with emarcid leaves or naked below. Comal leaves close, patent when moist, scarcely curved, papillose, short obovate, not sheathing; margins slightly or not recurved; cells subquadrate, the inner basal greater and hyaline; costa red and thick, faintly rough at back, excurrent into a long, hyaline, or at the base reddish, more or less denticulate hair-point.

This species belongs either to the section *Syntrichia* or to *Eubarbula (Cuneifoliae)*; the leaves are larger than in *Barbula carnifolia*.

(230.) **B. Muelleri**, Bruch & Schimp.; Lesq. & James, Mosses of North America, 133; Canadian Musci, No. 83.

On earth in the mountains at Yale, B.C.; on rocks in the vicinity of Victoria, Vancouver Island. (*Macoun.*) On rocks, Alert Bay, Vancouver Island. (*Dawson.*) Alaska. (*Roth. Alask.*)

VIII. GRIMMIEÆ.

42. CINCLIDOTUS, Beauv.

- (231.) **C. fontinaloides**, Beauv. ; Lesq. & James, Mosses of N America, 134.

On rocks in the bed of a creek, Ontario, Canada. (*Lesq. & James.*)

43. SCOULERIA, Hook.

- (232.) **S. aquatica**, Hook. ; Drumm. Musc. Bor.-Am., No. 63.

Grimmia Scouleria, Lesq. & James, Mosses of North America, 137.

Scouleria aquatica, var. *virescens*, Kindb., Bull. Torr. Bot. Club XVI, 93
Canadian Musci, No. 105.

Upon stones in the Columbia and Portage rivers. (*Drummond.*)
On stones in mountain brooks and in the Fraser River at Yale, B.C. ;
fruiting abundantly ; also on rocks in a mountain brook, Lake Mara,
near Sicamous, B.C. (*Macoun.*)

- (233.) **S. Nevii**, C. Muell., Bull. Torr. Bot. Club XVII, 273.

S. aquatica, var. *nigrescens*, Kindb., Bull. Torr. Bot. Club, XVI, 94 ; Cana-
dian Musci, No. 388.

Leaves when dry more or less patent, dark green, broader near the
middle, very short-acuminate, suboblong-elliptic, obtusely dentate also
below the middle, entire in the broad rounded apex, margined by
obscure cells ; upper cells dusky, the lower subpellucid, the median of
the base linear and not porose. *Scouleria aquatica* has the leaves when
dry appressed and blackish (only the uppermost green), broader at the
base, narrow below the middle and acuminate, ovate-lanceolate,
sharply serrate from the middle to the contracted apex, very distinctly
margined by obscure cells ; the most of the cells dusky and thick-
walled except the few median linear not porose ones of the base ;
inner perichetial leaves shorter, less dusky ; perigonal leaves short,
suboval and very obtuse.

On rocks in Glacier Creek, Roger's Pass, Selkirk Mountains,
B.C. ; in a mountain brook, Lake Mara, near Sicamous, B.C. ; on rocks
in the Nanaimo River, below the railway bridge, near Nanaimo, Van-
couver Island. (*Macoun.*)

- (234.) **S. Muelleri**, Kindb. (n. sp.) Canadian Musci No. 558.

Leaves when dry loosely appressed and dark green, broader above the base, oblong-ovate or nearly elliptic, very short-acuminate, sharply serrate above, already below, the middle; entire in the broad rounded apex, indistinctly margined by pale-orange cells; all cells subpellucid, the median at the base linear, porose and numerous. Inner perichetial leaves longer, from the short dilated and entire base sublinear and serrate, very pellucid.

On boulders in the Columbia River, about a mile and a half above Revelstoke, B.C., on the east side of the river, May 12th, 1890. (*Macoun.*)

44. GRIMM A. Ehrh.

(A.) *Schistidium*.

- (235.) **G. conferta**, Funck; Lesq. & James, Mosses of N. America, 135; Canadian Musci, No. 84.

On rocks along Jupiter River, Anticosti; on rocks, shores of Lake Superior and Lake Nepigon, Ont.; on rocks, Fort Chipewyan, Lake Athabasca, and at the Rocky Mountain Cañon, Peace River; on rocks, Stewart's Lake Mountain, at the Blackwater River; and on dry rocks at Lytton on the Fraser River, B.C. (*Macoun.*) On rocks, Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Pictou, N.S. (*McKay.*) On rocks, Tadousac, Que. (*St. Cyr.*) Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

- (236.) **G. Manniæ**, C. Muell.

On dry sun-baked rocks on the right bank of the Thompson River, beyond the bridge at Lytton, B.C., April 17th, 1889. (*Macoun.*)

- (237.) **G. apocarpa**, Hedw.; Lesq. & James, Mosses of N. America, 136; Canadian Musci, No. 85.

G. apocarpa var. *stricta*, Drumm. Musc. Bor.-Am. No. 55.

Rocks between Norway House and York Factory, Hudson Bay. (*Drummond.*) Cape Prince of Wales and Nottingham Island, Hudson Strait. (*R. Bell.*) On rocks, Earltown Lake, N.S. (*McKay.*) Common on rocks, St. John Co., N.B. (*Fowler's Cat.*) Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Tadousac, Que. (*St. Cyr.*) Miquelon Island. (*Delàmare.*) Rivière St. Anne des Monts, Gaspé

Co., Que. ; on rocks, Jupiter River, Anticosti ; abundant on boulders at Ottawa, Carleton Place, Belleville, Niagara Falls, Owen Sound, Lake Superior and Lake Nepigon, Ont. ; dry rocks at Morley, Banff and Hector, Rocky Mountains ; on boulders along Peace River at the mouth of Smoky River, lat. $56^{\circ} 12'$; on rocks at McLeod's Lake, along the Blackwater River, at C  che Creek, Kamloops, Revelstoke, and Yale. B.C. (*Macoun.*) Mountains south of Tulameen River, B.C., alt. 6,000 feet. (*Dawson.*) On rocks near St. John, Newfoundland. (*Rev. A. Waghorne.*) Limestone rocks at Delaware, near London, Ont. (*J. Dearness.*) On rocks near Kingston Mills, Ont. (*Lawson.*) Sabine Island, Greenland. (*Fl. Gr.*)

(238.) ***G. gracilis***, Nees & Hornsch.

G. apocarpa, var. *gracilis*, Lesq. & James, Mosses of N. America, 136 ; Canadian Musci, No. 86.

On perpendicular rocks, St. Anne des Monts River, Gasp   Co., Que. ; rocks around Lake Nepigon, and along the Dawson Route, west of Lake Superior ; on dry rocks at Morley, Kananaskis, and Hector, Rocky Mountains ; on dry rocks at Revelstoke, Deer Park, Sproat, Sicamous, Yale, Agassiz, and Moodyville on Burrard Inlet, B.C. ; Peace River, near Fort St. John. Lat. $56^{\circ} 12'$. (*Macoun.*) On dry rocks at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Tadousac, Que. (*St. Cyr.*)

(239.) ***G. rivularis***, Nees & Hornsch.

G. apocarpa, var. *rivularis*, Lesq. & James, Mosses of N. America, 136 ; Canadian Musci, No. 87.

G. apocarpa, Drumm. Musc. Bor.-Am. No. 54.

On rocks between Norway House and York Factory, Hudson Bay. (*Drummond.*) At Fredericton, N.B. (*Fowler's Cat.*) Wet rocks in a brook at Cape Rosier, Gasp   Co., Que. ; wet rocks, north of Lake Superior and along the Dawson Route west of the lake ; wet rocks, Kananaskis River near its mouth, Rocky Mountains ; on great boulders in the Columbia, one and a half miles above Revelstoke, B.C. ; on rocks in Cornwallis River, near Comox, Vancouver Island. (*Macoun.*) Clearwater River, lat. 57° , N.W.T. (*J. M. Macoun.*) On wet rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Greenland. (*Fl. Gr.*)

(240.) ***G. alpicola***, Swartz ; Musc. Suec. ; Flora of Greenland, 346.

West Greenland. (*Fl. Gr.*)

- (241.) **G. platyphylla**, Mitt. ; Lesq. & James, Mosses of N. America, 136.

On rocks near the mouth of Smoky River where it enters Peace River, lat. 56° 20', 1872 ; on rocks by the torrent at Hector, Rocky Mountains, 1890. (*Macoun.*)

- (242.) **G. Agassizii**, Lesq. & James, Mosses of N. America, 136.

Rocks washed by the waves, north shore of Lake Superior, 1848. (*Agassiz.*) On large boulders in Bleeker's Grove, within the limits of the city of Belleville, Ont. 1888. (*Macoun.*)

- (243.) **G. maritima**, Turn. ; Lesq. & James, Mosses of N. America, 137.

Miquelon Island. (*Delàmare.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (244.) **G. crassinervis**, C. Muell.

G. maritima, Canadian Musci, No. 88.

Collected on Vancouver Island, near Victoria, by Dr. Roell. 1888. On rocks washed by the sea, Salt Spring Island, Gulf of Georgia, also on rocks by the sea, at Hastings, Burrard Inlet, B.C. May 9th, 1887. (*Macoun.*)

- (245.) **G. chloroblasta**, Kindb. (n. sp.)

G. coscinodontoides, Kindb., Bull. Torr. Bot. Club. XVII., 271 ; Canadian Musci, No. 416.

Differs from *G. conferta* principally in the long, hair-pointed leaves, the perichetial being larger and green, the lid of the capsule short conic-apiculate, the teeth very cribose, nearly as in *Coscinodon pulvinatus*.

On dry rocks on the mountain overlooking the Thompson River at Spence's Bridge, B.C., alt. 3,500 feet, May 28th, 1889. (*Macoun.*)

- (246.) **G. heterophylla**, Kindb., Bull. Torr. Bot. Club, XVII. 271.

Differs from *G. conferta* in the stem being nearly simple, the leaves patent, when dry, the upper canaliculate, margins involute above, the perichetial very much larger, the peristome reddish, not papillose. The tufts are about 2 cm. high, when dry dark green above.

On rocks on the mountains between the Nicola and Thompson rivers at Spence's Bridge, B.C., alt. 3,500 feet, May 28th, 1889. (*Macoun.*)

(247.) **G. atricha**, C. M. & Kindb. (n. sp.)

Differs considerably from *Grimmia conferta* in the tufts densely cohering, the leaves being small and when dry appressed, muticous, short, ordinarily ovate-oblong, not recurved at the margins, the cells not incrassate, the perichetial leaves very much larger and broader than the other ones; capsule more wide-mouthed, teeth of the peristome orange only below, yellow or hyaline above, entire, not rimose nor papillose, lid longer rostrate.

This small moss grows in large, but only 1 cm. high, dry, blackish or when moist, green tufts.

On the sloping face of broken rocks at the summit of the mountains back of Sproat, Columbia River, B.C., alt. 4,000 feet, June 24th, 1890. (Macoun.)

(248.) **G. pachyneurula**, C. M. & Kindb. (n. sp.)

Tufts small, green. Leaves small, when dry appressed, not twisted, when moist, spreading, short ovate-lanceolate, recurved on both sides, hairless and obtuse; cells uniform subquadrate, not erose, the alar scarcely distinct; costa percurrent, thick, and smooth at the back.

This species is found only in a barren state, but appears to belong to the section *Schistidium*.

On rocks, near the Whirlpool on the west side of the Columbia, at Revelstoke, B.C. May 7th, 1890. (Macoun.)

(B.) **Eugrimmia**.(249.) **G. anodon**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 138; Canadian Musci, No. 89.

On dry rocks at Morley, foot-hills of Rocky Mountains, and at Lytton, B.C. (Macoun.)

(250.) **G. plagiopodia**, Hedw.; Lesq. & James, Mosses of N. America, 138.

On dry rocks, Cypress Hills, Alberta; on sandstone rocks along Peace River, 50 miles below Dunvegan; on rocks, Blackwater River, B.C. (Macoun.)

Var. **pilifera**, Lesq. & James, Mosses of N. America, 138; Canadian Musci, No. 511.

On dry rocks along Peterson's Creek, in the flats near the railway station at Kamloops, B.C., 1890. (Macoun.)

- (251.) **G. nivalis**, Kindb., Bull. Torr. Bot. Club, XVII, 271; Canadian Musci, No. 415.

Tufts blackish, low and compact. Stems denudate below. Leaves dusky above, small, short, ovate-lanceolate, acute, mucous or indistinctly piliferous, flat on the borders, the uppermost and the perichetial ones longer and narrower with a smooth and long hair-point; cells quadrate, chlorophyllose, the lower hyaline, short-rectangular; costa percurrent. Inflorescence diœcious. Capsule exserted, wide-mouthed when empty, not rugose nor striate; calyptra dimidiate; teeth orange, nearly entire, spreading when dry; lid mammillate; pedicel when dry arcuate, when moist nearly straight, elongate, pale.

Differs from *G. plagiopodia* in the longer acute leaves and the pedicel very much longer than the capsule.

On inclined rocks in compact wide-spreading tufts on the Gold Range, north of Griffin Lake, B.C., alt. 7,000 feet, August 10th, 1889. (Macoun.)

- (252.) **G. tenella**, C. Muell.; Canadian Musci, No. 501.

This species, allied to *G. nivalis*, is described by C. Mueller, in the revision of the Mosses collected by Dr. Røell.

Summit of Mount Queest, Gold Range, B.C., alt. 7,000 feet, 1889. (J. M. Macoun.) On dry rocks at Deer Park, Lower Arrow Lake, and near the mouth of Pass Creek, Columbia River, B.C., 1890. (Macoun.)

- (253.) **G. pulvinata**, Smith; Lesq. & James, Mosses of N. America, 138; Canadian Musci, No. 90.

In small tufts on dry rocks on the slopes of Sproat Mountain, Columbia River, and on calcareous tufa at the Hot Springs, Kootanie Lake; dry rocks, Blackwater River, C  che Creek, and at Lytton, B.C.; abundant on Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. (Macoun.)

- (254.) **G. sarcocalyx**, Kindb., Bull. Torr. Club, XVII, 271.

Differs from the allied *Grimmia leucoph  a* principally in the leaves being furnished with a faintly denticulate hair-point, the capsule short-oval, the lid *obliquely* beaked, the pedicel doubly longer than the capsule, sheath pale-red, inflated and carnose. The leaves are short, very broad at the base as in *G. leucoph  a*; the cells are nearly all quadrate.

On rocks on the summit of the mountain between the Nicola and

Thompson rivers at Spence's Bridge, B.C., alt. 3,500 feet, May 28th, 1889. (*Macoun.*)

- (255.) ***G. contorta***, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 139.

On rocks in the vicinity of McLeod's Lake, northern British Columbia, June 25th, 1875. (*Macoun.*)

- (256.) ***G. funalis***, (Schwagr.) Schimp.; Braithw. British Moss-Flora, Vol. II. 13.

G. spirilis, Hook. & Taylor; Flora of Greenland, 347.

Dioecious. Densely caespitose, readily falling asunder, grey-green or yellowish green above, reddish brown or fuscous below. Stems 1-2 in. high, slender, erect, sub-dichotomous, free from radicles. Leaves when dry erect and spirally incumbent, when moist erecto-patent, small, lanceolate, upper with hyaline points, or extended into a smooth hair, the margin a little recurved, nerve narrow, vanishing at the apex; cells at base narrowly rectangular, quadrate and hyaline at margin, above quadrate and sinuose, upper in two strata, minute, quadrate. Perichetial leaves broader at base, concave, piliferous; pedicel shorter than the perichetial leaves, curved, pale yellow; calyptra conico mitriform, 5-lobed, capsule small, ovate, pale reddish brown, 8-striate; annulus broad of 3-4 rows of cells, lid from a convex base; short-pointed; teeth rufous purple, lacunose or torn at apex. Male plants taller and more slender; inflorescence terminal, inner bracts oblong-acute.

Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*)

- (257.) ***G. prolifera***, C. M. & Kindb. (n. sp.)

Tufts soft, coherent and very radiculose, dry blackish below, proliferous with long green shoots. Stem slender, naked below, 3-4 cm. long. Leaves dry incurved or crisped, the upper often falcate when moist, narrow, from the oblong appressed subvaginant base attenuate to a shorter acute acumen, muticous or rarely furnished with an apical hair point-like cell, margins recurved at least at one side; lower basal cells narrow-rectangular, the other and the upper subquadrate, all thin-walled, faintly yellowish and pellucid; costa yellow-brown, percurrent.

Differs from the allied *Grimmia contorta* (Wahlenb.) principally in the shorter, muticous, at the margin recurved, leaves, the upper more

distant than the lower. It is also distinct from *G. hamulosa*, Lesq. (*vide* C. Mueller.)

- (258.) ***G. torquata***, Grov. ; Lesq. & James, Mosses of N. America, 140 ; Canadian Musci. No. 91 ; Drumm. Musc. Bor.-Am., No. 58.

Near the "Height of Land" Rocky Mountains. (*Drummond.*) Abundant on rocks at Hector and along the Kicking Horse Pass, Rocky Mountains ; on dry rocks at Revelstoke and Sproat, Columbia River ; also at Sicamous and Agassiz, B.C. ; on rocks at Victoria and on Mount Benson, Vancouver Island ; on Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. (*Macoun*) Greenland. (*Fl. Gr.*)

- (259.) ***G. tortifolia***, Kindb. Enumer. Bryin. Doovens. (1888.)

G. streptophylla, Laubm. Schwed. u. Norw.

Nearly allied to *Grimmia torquata*, but differing principally in the shorter leaves and leaf-cells.

On rocks in Eagle Pass, west of Revelstoke, B.C., May 23rd, 1890. (*Macoun.*)

- (260.) ***G. Muehlenbeckii***, Schimp. ; Lesq. & James, Mosses of N. America, 140.

On rocks Bow River Pass near the "Gap," Rocky Mountains ; on dry rocks, Blackwater River, and at Lytton, B.C. (*Macoun.*) On rocks, Newfoundland. (*Rev. A. Waghorne.*)

- (261.) ***G. elatior***, Bruch ; Flora of Greenland, 347 ; Braithw. British Moss-Flora, Vol. II., 23.

Diccous. Plants robust, laxly caespitose, 3-10 cm. high, black at the base, fuscous-green above. Leaves very long, elongate-lanceolate from a broader base, margins revolute below, gradually attenuated into a smoothish hair, basal cells narrow, upper short, more or less papillose, all slightly sinuose. Capsule ovate 10-striate, when dry, oblong, pale-brown ; calyptra lobate ; annulus of 3 rows of cells ; lid rostellate or sub-acicular ; teeth purple ; pedicel short, pale, arcuate.

Godhavn, Greenland. (*R. Brown.*) On rocks, Mount Alymer, north of Devil's Lake, Rocky Mountains, alt. 8,300 feet, August 6th, 1891. (*Macoun.*)

- (262.) **G. trichophylla**, Grev. ; Lesq. & James, Mosses of N. America, 141 ; Canadian Musci, No. 92.

G. Californica, Canadian Musci, No. 93.

On dry rocks, Kicking Horse Lake, Rocky Mountains ; on rocks, Blackwater River, Revelstoke, Sicamous, Lytton, and at Yale, B.C. ; rocks at Mount Tolmie, near Victoria, Vancouver Island ; also on Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. ; and abundant on rocks at Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

- (263.) **G. depilata**, Kindb.

G. densa, Kindb., Bull. Torr. Bot. Club, XVII., 271.

Tufts large and compact, brown or green above. Stem elongate. Leaves, when moist arcuate, ovate-lanceolate (shorter than in *G. trichophylla*), recurved on both sides, generally hairless and obtuse, sometimes with a short hair-point ; alar cells hyaline elongate in 4-5 rows, the other more or less erose. Perichetial leaves from the sheathing base narrowed into a longer, canaliculate, sublinear (not subulate) and obtuse acumen. Capsule nearly smooth, when dry finally rugose, not distinctly costate ; teeth red, deeply cleft below the middle, when dry, spreading, connivent when moist ; beak more or less oblique ; pedicel arcuate when dry.

This species is nearly allied to *Grimmia trichophylla* and very critical but is approved of by Dr. C. Mueller.

Summit of Mount Benson, near Nanaimo, Vancouver Island, alt. 3,000 feet ; June 8th, 1887. (*Macoun.*)

- (264.) **G. Olneyi**, Sulliv. ; Lesq. & James, Mosses of N. America, 142.

On boulders along the St. Lawrence at Brockville ; on Laurentian rocks, Gibson's Mountain, Prince Edward Co., Ont. (*Macoun.*)

- (265.) **G. arcuatifolia**, Kindb., Bull. Torr. Bot. Club, XVI., 93.

Loosely tufted ; tufts blackish, dark green above. Stems 5 cm. long, denudate at base. Lower leaves small, upper long and not crisped ; hooked-curved when moist, ovate-lanceolate, long-acuminate and acute, reflexed at least at one border with a short denticulate hair-point ; most of the basal cells pellucid, long and narrow, the upper basal cells sinuous, the marginal uniseriate and hyaline or not distinct ;

the other cells chlorophyllous, quadrate and not sinuous; costa percurrent canaliculate, pellucid in the middle.

Probably allied to the European *Grimmia elatior*, Bryol. Europ., but this species has also the upper cells sinuous.

Abundant on dry rocks, Cedar Hill and Mount Tolmie, near Victoria, Vancouver Island, April 21st, 1887. (*Macoun.*)

(266.) **G. microtricha**, C. M. & Kindb. (n. sp.)

Plants in small blackish pulvinate tufts with green tops. Leaves, when moist, suberect, short ovate-lanceolate, margins recurved, plane only at the short base; cells short, the alar narrow and hyaline. Perichetial leaves ovate obtuse. Capsule oblong, smooth; teeth dark red; annulus not distinct; lid short conic, obtuse; calyptra narrow, dimidiate; pedicel flexuous, about 3 mm. long. Diceious or monœcious on distinct branches.

Differs from the allied *Grimmia alpestris* principally in the longer emergent capsule, the recurved leaf-margins and the short perichetial leaves.

On rocks north of the railway close to Revelstoke, B.C., May 7th, 1890. (*Macoun.*)

(267.) **G. alpestris**, Schleich.; Lesq. & James, Mosses of N. America, 146; Canadian Musci, No. 414.

Summit of Mount Albert, Gaspé Co., Que.; also along the Blackwater River, B.C., 1875. (*Macoun.*)

(268.) **G. sulcata**, Saut.; Flora of Greenland, 348.

Franz Joseph Fjord (sterile.) (*Fl. Gr.*)

(269.) **G. Donniana**, Smith; Lesq. & James, Mosses of N. America, 142.

On dry rocks, Cypress Hills, Alberta. August 2nd, 1880. (*Macoun.*)

(270.) **G. ovata**, Web. & Mohr; Lesq. & James, Mosses of N. America, 143; Drumm. Musc. Bor.-Am., No. 59.

G. commutata, Canadian Musci, No. 94, in part.

From Lake Superior to the Rocky Mountains. (*Drummond.*) On rocks, River Ste. Anne des Monts, Gaspé Co., Que.; on rocks at Thunder Bay, Lake Superior, and at the outlet of Nipigon Lake, Ont.; also on rocks at Peace River, lat. 56° 12'. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (271.) **G. Pennsylvanica**, Schwaegr ; Lesq. & James, Mosses of N. America, 144 ; Drumm. Musc. Bor.-Am., No. 56.

Upon rocks, near the Falls of Niagara. (*Drummond.*)

- (272.) **G. calyptrata**, Hook. ; Lesq. & James, Mosses of N. America, 144 ; Canadian Musci, No. 472 ; Drumm. Musc. Bor.-Am. No. 60.

Rocks amongst the Rocky Mountains. (*Drummond.*) On rocks at the "Gap," and 3 miles below Hector, Rocky Mountains ; dry rocks Deer Park, Lower Arrow Lake, Columbia River ; on dry rocks at Kamloops, and on mountains at Spence's Bridge and Blackwater River, B.C. (*Macoun.*)

- (273.) **G. commutata**, Hueben. ; Lesq. & James, Mosses of N. America, 145 ; Canadian Musci, No. 94, in part.

On dry rocks at Sicamous, B.C., 1889 ; and on rocks at Deer Park, Lower Arrow Lake, and Sproat, Columbia River, B.C. 1890. (*Macoun.*)

- (274.) **G. montana**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 145 ; Canadian Musci, No. 509.

On Kettle River, B.C. (*Watson.*) On dry rocks at Deer Park Lower Arrow Lake, Columbia River, B.C. 1890. (*Macoun.*)

- (275.) **G. mollis**, Bryol. Europ. III. Tab., 253 ; Flora of Greenland, 348.

Greenland. (*Fl. Gr.*)

- (276.) **G. elongata**, Kaulf. ; Braithw. British Moss-Flora, Vol. II., 30.

Dicecious. Tufts lax, pulvinate, fuscous or black below, olivaceous, green, and shortly canescent. Leaves elongate-lanceolate from an erect, oblong base, slightly recurved at the margins ; basal cells narrow, upper quadrate, sinuose ; costa excurrent. Capsule exerted on a short, nearly straight, yellowish pedicel, small, ovate, smooth, pale-fuscescent ; lid conic-obtuse ; annulus double or triple ; calyptra cucullate, lobate, teeth yellow.

Greenland. (*Fl. Gr.*)

- (277.) **G. unicolor**, Grev. ; Lesq. & James, Mosses of N. America, 146 ; Canadian Musci, No. 95.

G. atrata, Drumm. Musc. Bor.-Am., No. 57.

Upon rocks, Lake Superior. (*Drummond.*) On rocks, north shore

of Lake Superior and at Current River, Thunder Bay ; also on rocks by the shores of Lake Nepigon. (*Macoun.*) Nepigon River, Lake Superior. (*A. Smith.*)

45. RACOMITRIUM, Brid.

- (278.) **R. patens**, Heuben. ; Lesq. & James, Mosses of N. America, 147 ; Canadian Musci, No. 96.

Trichostomum patens, Drumm. Musc. Bor.-Am., No. 131.

Grimmia patens, Mitt. Journ. Linn. Soc. VIII. 20.

Upon rocks near the "Height of Land," Rocky Mountains. (*Drummond.*) On rocks at the mouth of Illicillewaet Cañon near Revelstoke ; along Pass Creek at Sprout ; wet rocks, Lake Mara, Sicamous, B.C. ; summit of Mount Benson near Nanaimo, Vancouver Island. (*Macoun.*) Between Fort Colville and the Rocky Mountains. (*Lyall.*) Greenland. (*Fl. Gr.*)

- (279.) **R. aciculare**, Brid. ; Lesq. & James, Mosses of N. America, 148 ; Canadian Musci, No. 97.

Trichostomum aciculare, Drumm. Musc. Bor.-Am., No. 133.

Grimmia acicularis, Mitt. Journ. Linn. Soc. VIII. 20.

On stones in rivulets, to the westward of the "Height of Land," Rocky Mountains. (*Drummond.*) Halifax Co., N.S. (*McKay.*) On stones in small brooks around Halifax and Truro, N.S. ; in a brook north of Lake Superior ; on rocks in the Columbia River above Revelstoke, in Eagle River at Griffin Lake, on rocks Lake Mara, Sicamous ; common in the Fraser River at Yale ; wet rocks at Agassiz and Burrard Inlet at Hastings, B.C. (*Macoun.*) On stones, New Harbor, Clance Cove and Green Harbor, Newfoundland. (*Rev. A. Waghorne.*) British Columbia. (*Lyall, Douglas.*) Sitka. (*Roth. Alaska.*) Miquelon Island. (*Delàmare.*)

- (280.) **R. Nevii**, C. Muell. ; Lesq. & James, Mosses of N. America, 148 ; Canadian Musci, No. 485.

On rocks at Hot Springs, Kootanie Lake ; abundant on rocks at Revelstoke close to the big eddy west side of the Columbia River ; on rocks in the bed of the Fraser River at Yale, and at Lake Mara, Sicamous, B.C. ; on stones in a brook at Truro, N.S. (*Macoun.*)

- (281.) **R. protensum**, Braun, (Mss.) Hueben, Musc. Germ. 211. (1833.)

On rocks near Oak Bay, Victoria, Vancouver Island, 1875. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (282.) **R. Macounii**, Kindb., Bull. Torr. Bot. Club, XVI., 93 ; Canadian Musci, No. 418.

Plants fastigiatly branching; innovations without lateral fasciculate branchlets. Tufts loosely caespitose, naked at the base, brown, with green tips. Leaves loose, crispate when dry, patent or squarrose when moist, ovate-lanceolate, acute, mucicous, smooth and entire, at one side slightly reflexed or erect, on the other always erect; upper cells quadrate and obscure, scarcely or not erose, lower linear and sinuose, marginal uniseriate, quadrate-rectangular and hyaline, basal yellow; costa brown and percurrent. Capsule oblong, dark-brown, not striate; teeth orange, pertuse or cleft to below the middle, smooth; pedicel 0.5 c.m. long, straight or sub-erect and contortuate.

In large masses on huge boulders between Cathedral Mountain and Mount Stephen near Field, Rocky Mountains; also on rocks near the Glacier Hotel, Selkirk Mountains; on the summit of the Gold Range, north of Griffin Lake, B.C., alt. 7,000 feet. (Macoun.)

- (283.) **R. alternuatum**, C. M. & Kindb.; Canadian Musci, No. 524.

Allied to *R. Macounii*. Stem lower, 3-4 cm. high, more branched above. Tufts loose, not naked at the base, brown with green tips. Leaves not crispate, when moist suberect or subpatent, nearly straight, ovate-lanceolate, acuminate-acute, often furnished with a short dentate hair point, smooth, reflexed at the base at least on one side; all cells erose, the lower linear, the upper short, angular; costa greenish, stout, percurrent. Perigonal leaves subovate or short-acuminate, acute or subobtusate. Female plants not found.

On boulders at the base of Avalanche Mountain, Roger's Pass, Selkirk Mountains, B.C., Aug. 5th, 1890. (Macoun.)

- (284.) **R. robustifolium**, Kindb., Bull. Torr. Bot. Club, XVII., 272.

P. obscurum, Kindb.; Canadian Musci, No. 419.

Differs from *R. Macounii* in the leaves being less crispate, (very variable in color, sometimes dark green) pellucid, very squarrose when moist, more reflexed on the borders, often furnished with a short hair-point. Capsule oval, striate or plicate when dry; teeth dark purple-brown, deeper cleft, papillose; the beak of the lid oblique, needle-shaped, very much shorter than the capsule; pedicel slightly curved.

Both these species differ from *R. varium* and *R. Organum* in the short pedicel and longer leaves. On rocks in a brook, Gold Range, north of Griffin Lake, B.C., alt. 7,000 feet; Mount Arrowsmith, Vancouver Island, alt. 5,700 feet. July 17th, 1887. (Macoun.)

- (285.) **R. Sudeticum**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 149 ; Canadian Musci, No. 98, in part.

Trichostomum Sudeticum, Drum. Musc. Bor.-Am. No. 129.

On rocks near the "Height of Land," Rocky Mountains. (*Drummond.*) On earth among rocks at Truro, N.S. ; on rocks at the Asulkan Glacier and Roger's Pass, Selkirk Mountains. (*Macoun.*) On rocks, Mount Queest, Gold Range, B.C., alt. 6,000 feet. (*J. M. Macoun.*) On rocks at New Harbor and Chance Cove, Newfoundland. (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*)

- (286.) **R. heterostichum**, Brid. ; Lesq. & James, Mosses of N. America, 149 ; Canadian Musci, No. 99.

On rocks at the base of Avalanche Mountain, Roger's Pass, Selkirk Mountains ; dry rocks at Revelstoke, on the Columbia River ; Deer Park, Lower Arrow Lake, and along Pass Creek at Sproat ; on rocks at Sicamous, at Yale and Spence's Bridge, also at Hastings, B.C. ; very common on rocks around Victoria, and on Mount Arrowsmith, Vancouver Island. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (287.) **R. obtusum**, (Smith) Lindb. ; Braithw. British Moss-Flora, Vol. II., 40.

R. Sudeticum, Canadian Musci, No. 98, in part.

Diœcious ; short, densely pulvinate. Leaves quite hairless, ovate-oblong, gradually acuminate, obtuse at the point, nerve lost far below the apex, margin narrowly revolute. Capsule oblong, narrowed at the mouth, lid acicular, peristome fugacious, irregular, teeth with 2 unequal legs.

On rocks near Otter Head, Lake Superior, July 28th, 1869. (*Macoun.*)

- (288.) **R. affine**, (Schleich.) Lindb. ; Braithw. British Moss-Flora, Vol. II., 41 ; Canadian Musci, No. 499.

Diœcious ; yellowish green, scarcely hoary. Stems slender, elongate, fasciculate-branched. Leaves lanceolate-acuminate, acute with a short or obsolete hair-point. Capsule elliptic-oblong, narrow at mouth ; lid conico-rostrate ; teeth short, pale, cleft to the base ; pedicel short.

On dry rocks, North West Arm, Halifax, N.S., June 19th, 1883 ; on rocks in Roger's Pass, at the base of Avalanche Mountain, Selkirk Mountains ; and near McLeod's Lake, B.C. (*Macoun.*)

- (289.) **R. fasciculare**, Brid.; Lesq. & James, Mosses of N. America, 150; Canadian Musci, No. 416.

Trichostomum fasciculare, Drumm. Musc. Bor.-Am., No. 132.

About Lake Superior; and upon the rocks of Portage River, Rocky Mountains. (*Drummond.*) On rocks in McDonald's Brook, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks along Lake Superior and on islands in Lake Nepigon; on rocks, Roger's Pass, Selkirk Mountains, at Revelstoke on the Columbia River, at Deer Park, Lower Arrow Lake, and at Hastings, B.C. (*Macoun.*) On rocks, Queen Charlotte Islands. (*Dawson.*) On rocks at New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Alaska. (*Roth. Alaska.*) Jakobshavn, Greenland. (*Fl. Gr.*) Miquelon Island. (*Delàmare.*)

- (290.) **R. varium**, Lesq. & James, Mosses of N. America, 150.

R. heterostichum, var. *obtusum*, Kindb.; Canadian Musci, No. 100.
Grimmia varia, Mitt. Journ. Linn. Soc. VIII., 21.

On wet rocks, close to the water below the railway bridge over the Nanaimo River, Vancouver Island, 27th April, 1887. (*Macoun.*) British Columbia. (*Lyll, Douglas.*)

- (291.) **R. Oreganum**, Ren. & Cardt., Bot. Gaz. XIII., 198.

R. varium, Canadian Musci, No. 104.

Robust, in wide yellowish tufts. Stems prostrate and a little naked below; branches erect, 4-5 cm. long, simple or dichotomous, and with very few short branchlets. Leaves appressed when dry, erect-spreading when moist, generally more or less homomallus at the top of the branches, ovate, or broadly ovate-lanceolate, acuminate, carinate, slightly plicate below, sometimes obtuse, generally acute, muticous or with a short hyaline apiculus or a more or less elongated, shortly decurrent, slightly serrulate hair-point; borders revolute from the base to near the apex; costa percurrent, prominent on the back; cells thick-walled, linear, very sinuose, the lower mostly elongate, the upper 2-4 times longer than broad, slightly papillose. External perichetial leaves shortly piliferous, the inner muticous, of a more delicate texture of thin-walled and scarcely sinuose cells. Pedicel reddish, paler above, twisted to the left, 12-18 mm. long, 1 mm. broad; lid long-beaked; annulus large; teeth purple, very long, cleft to the base into two filiform, often unequal, nodulose and faintly papillose legs; calyptra conical, long-acuminate, brownish at apex, laciniate-lobulate at base.

A remarkable species intermediate between *R. canescens* and *R. heterostichum*, but more closely allied to the last, from which it differs by the aspect, the yellowish color, the robustness and thickness of the stems, the pedicel twice longer and the teeth much more elongated.

On loose boulders in woods near McLeod's Lake, Northern British Columbia; on rocks, Mount Tolmie, near Victoria, Vancouver Island; common on loose boulders at Yale, B.C., May 17th, 1875. (*Macoun.*) On rocks, Texada Island, Gulf of Georgia, B.C. (*Dawson.*)

(292.) ***R. speciosum***, C. Muell. (n. sp.)

Found on Vancouver Island by Dr. S. Ruell in 1888. This species was found by me at Victoria in 1875, and named by Austin *R. lanuginosum*, and also *R. canescens* var. *ericoides*. It was collected again on April 26th, 1887, and named by Dr. Kindberg *R. heterostichum*. It is very common on the rocks in oak woods around Victoria. Fruiting abundantly. (*Macoun.*)

(293.) ***R. microcarpum***, Brid.; Lesq. & James, Mosses of N. America, 150; Canadian Musci, No. 101.

Trichostomum microcarpum, Drumm. Musc. Bor.-Am., No. 128.

Upon rocks, shore of Lake Superior. (*Drummond.*) Dry rocks, North West Arm, Halifax, N.S.; on rocks, Mount Albert, Gaspé Co., Que.; on rocks, 25 miles north of Michipicotin, Lake Superior; dry rocks, Nepigon River, and along the lake; on earth on stone, Asulean Glacier, Selkirk Mountains. (*Macoun.*) Skeena River, B.C. (*J. M. Macoun.*) Godhavn, Greenland. (*Fl. Gr.*)

(294.) ***R. lanuginosum***, Brid.; Lesq. & James, Mosses of N. America, 151; Canadian Musci, No. 102.

Trichostomum lanuginosum, Drumm. Musc. Bor.-Am., No. 134.

Grimmia lanuginosa, Mitt. Journ. Linn. Soc. VIII., 21.

Miquelon Island. (*Delàmare.*) Upon a rock near the "Height of Land," Rocky Mountains, very rare, only a single patch being seen. (*Drummond.*) Nottingham Island and North Bluff, Hudson Strait. (*R. Bell.*) Halifax Co., N.S. (*McKay.*) On rocks at Louisburg, Cape Breton Island; summit of Mount Albert, Gaspé Co., Que.; Mount Aylmer, Rocky Mountains, 8,000 feet alt. (*Macoun.*) Vancouver Island. (*Wood.*) Kotzebue Sound. (*Roth. Alask.*) St. Paul Island, Behring Sea. 1891. (*J. M. Macoun.*) Baffin's Bay. (*Ross, Voy.*) Smith's Sound. (*Dr. Kane.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) Shannon Island, Greenland. (*Fl. Gr.*)

- (295.) **R. canescens**, Brid. ; Lesq. & James, Mosses of N. America, 151 ; Canadian Musci, No. 103.

Grimmia canescens, Mitt. Journ. Linn. Soc. VIII., 21.

Miquelon Island. (*Delàmare*.) Digge's Island, Hudson Strait. (*R. Bell*.) On sand a few miles up St. Anne des Monts River, Gaspé Co., Que. ; on rocks, north shore of Lake Superior ; and at Point aux Pins, near Sault Ste. Marie ; limestone rocks at Hector and Mount Aylmer, Rocky Mountains ; on rocks, Roger's Pass, Selkirk Mountains ; common on rocks and sand at Revelstoke, and on rocks, Pass Creek, at Sproat, Columbia River, B.C. (*Macoun*.) Vancouver Island. (*Lyall*.) Unalaska Island, Behring Sea. 1891. (*J. M. Macoun*.) Godhavn, Greenland. (*Fl. Gr.*) Chance Cove, Newfoundland. (*Rev. A. Waghorne*.)

- Var. **ericoides**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 151 ; Canadian Musci, No. 417.

On rocks and silt, Asulean Glacier, Selkirk Mountains ; on rocks, North Arm, and at Hastings, Burrard Inlet, B.C. (*Macoun*.) Sitka. (*Roth. Alask.*) On rocks in Stanley Park, Vancouver, B.C. (*A. Law*.)

- Var. **lutescens**, Lesq. & James, Mosses of N. America, 151.

On rocks at Moodyville, Burrard Inlet, B.C., 1889. (*Macoun*.)

- Var. **muticum**, Kindb., Bull. Torr. Bot. Club XVII., 272.

Leaves without a hair-point ; cells yellow ; costa percurrent. Barren.

On rocks, summit of Gold Range, north of Griffin Lake, B.C. ; alt. 7,000 feet. August 8th, 1889. (*Macoun*.)

- (296.) **R. micropus**, Kindb.

R. brevipes, Kindb., Bull. Torr. Bot. Club, XVII., 272.

Habit of *R. heterostichum* or *R. canescens*. Plants dirty green ; branches nodose with numerous short branchlets. Leaves very faintly papillose, ovate lanceolate, long-acuminate, more or less revolute, hair-point long and rough ; cells yellow, the upper short or elongate, the alar distinctly quadrate. Capsule small oblong-cylindrical with a short oblique beak ; pedicel short, 0.5 cm. long. Peristome not examined.

On sloping garnetiferous rocks near the summit of the Gold Range, north of Griffin Lake, B.C. Alt. 6,700 feet. August 8th, 1889 ; also on rocks three miles below Hector, Rocky Mountains. (*Macoun*.)

46. HEDWICIA, Ehrh.

(297.) **H. ciliata**, Ehrh. ; Lesq. & James, Mosses of N. America, 152 ; Canadian Musci, No. 106.

Anictangium ciliatum, Drumm. Musc. Bor.-Am., No. 29.

Rocks in the country extending from Lake Superior to the Rocky Mountains. (*Drummond.*) On rocks, New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On rocks, Kent Co., N.B. (*Fowler's Cat.*) Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On boulders at Ottawa and Belleville, Ont. ; on rocks at Hector, Kicking Horse Lake, and Banff, Rocky Mountains ; also at Revelstoke, Columbia River, B.C. Common from the Atlantic to the Pacific in one form or another. (*Macoun.*) On rocks at London, Ont. (*J. Dearness.*) Mooyie River, British Columbia. (*Lyall.*) Greenland. (*Fl. Gr.*)

Var. **leucophæa**, Schimp. ; Canadian Musci, No. 107.

This is the common form on the Pacific Coast and Coast Range. Quesnel, Hastings, Moodyville, and Salt Spring Island, B.C. ; common on rocks around Victoria, Vancouver Island. (*Macoun.*)

Var. **secunda**, Schimp.

On rocks, at Sudbury Junction ; and around Lake Nepigon, Ont. (*Macoun.*)

Var. **viridis**, Schimp. ; Canadian Musci, No. 108.

Anictangium imberbe, Drumm. Musc. Bor.-Am. No. 30.

Very common in Ontario on boulders in shady woods. On rocks, North West Arm, Halifax, N.S. ; common at Ottawa and Belleville, Ont. ; also at Manitoba House, Lake Manitoba. (*Macoun.*) Montcalm Co., Que. (*D'Urban.*) Tadousac, Que. (*St. Cyr.*) Upper Canada. (*Drummond.*) On rocks in woods near London, Ont. (*J. Dearness.*)

***H. subnuda**, Kindb. (n. subsp.)

Leaves nearly hairless, the greater number broadly ovate, borders reflexed ; cells larger, subquadrate.

On rocks in McKay's Woods at Ottawa ; also on boulders, in woods, near Wooler, Ont., Oct. 6th, 1888. (*Macoun.*)

47. BRAUNIA, Bruch & Schimp.

- (298.) **B. Californica**, Lesq. ; Lesq. & James, Mosses of N. America, 153 ; Canadian Musci, No. 109, in part.

Hedwigia pilifera, Mitt. Journ. Linn. Soc. VIII. 45.

Abundant on rocks, North Arm of Burrard Inlet, B.C. ; quite common on rocks around Victoria, Vancouver Island. (*Macoun.*)

Var. **pillifera**, Lesq. & James Mosses of N. America, 153. Canadian Musci, No. 109 in part.

Abundant on rocks in oak woods near Victoria, Vancouver Island (*Macoun.*) On rocks, Vancouver Island. (*Lyll.*)

IX. ORTHOTRICHEÆ.**48. COSCINODON, Sprengel.**

- (299.) **C. pulvinatus**, Spreng. ; Lesq. & James, Mosses of N. America, 154.

On rocks, Alaska. (*Harrington.*) On rocks along the Telegraph Trail, north of Blackwater River, B.C. (*Macoun.*) Mountain rocks in alpine situations. (*Drummond.*)

49. PTYCHOMITRIUM, Bruch & Schimp.

- (300.) **P. Gardneri**, Lesq. ; Lesq. & James, Mosses of N. America, 156.

On rocks along the most western brook at Deer Park, Lower Arrow Lake, B.C. (*Macoun.*)

- (301.) **P. incurvum**, Sulliv. ; Lesq. & James, Mosses of N. America, 157.

Grimmia Hookeri, Drumm. Musc. Bor.-Am., No. 61.

On a stone near the Falls of Niagara, in Ontario ; rare. (*Drummond.*)

50. GLYPHOMITRIUM, Brid.

- (302.) **G. Canadense**, Mitt. ; Lesq. & James, Mosses of N. America, 158 ; Mitt. Journ. Linn. Soc. VIII., 21.

British North America. (*Drummond.*)

51. ZYCODON, Hook. & Tayl.

- (303.)
- Z. viridissimus**
- , (Dicks.) R. Brown.

Gymnostomum viridissimum, Drumm. Musc. Bor.-Am., No. 27.

White Falls, between Norway House and Hudson Bay at York Factory. (*Drummond.*)

52. AMPHORIDIUM, Schimp.

- (304.)
- A. Lapponicum**
- , Schimp.; Lesq. & James, Mosses of N. America, 158; Canadian Musci, No. 110.

Gymnostomum Lapponicum, Drumm. Musc. Bor.-Am., No. 28.*Didymodon Lapponicus*, Mitt. Journ. Linn. Soc. VIII. 18.

Rocks of Lake Superior, and upon the Rocky Mountains; common (No. 28). (*Drummond.*) Truro, N.S. (*Fowler's Cat.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks, Pirate's Cove, N.S.; along the Jupiter River, Anticosti; common at the Falls of Fox River, Gaspé Co., Que.; crevices of rocks 10 miles south of Port Arthur, Thunder Bay, Lake Superior; abundant on rocky islands in Lake Nepigon; on rocks, at Hector and Banff, Rocky Mountains, and in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Cascade Mountains. (*Lyall.*) Disco and Holsteinburg, Greenland. (*Fl. Gr.*) On rocks at Tadoussac, Que. (*St. Cyr.*)

- (305.)
- A. Mougeotii**
- , Schimp.; Lesq. & James, Mosses of N. America, 159; Canadian Musci, No. 420.

On rocks near the tunnel 5 miles below Hector, Rocky Mountains; on wet rocks, Pass Creek Falls at Sproat; on rocks on the Columbia River above Revelstoke and in Eagle Pass west of Revelstoke; at Sicamous and Agassiz, B.C.; Mount Benson, near Nanaimo, Vancouver Island; also Mount Erskine, Salt Spring Island, Gulf of Georgia. (*Macoun.*)

- (306.)
- A. Californicum**
- , Lesq. & James, Mosses of N. America, 159.

A. Sullivantii, Canadian Musci No. 111.

Near the British Columbian Boundary. (*Lyall.*) On rocks at Yale, B.C., and on rocks near Mount Tolmie, Victoria and at the Nanaimo River, Vancouver Island. (*Macoun.*)

- (307.) **A. caespitosum**, Lesq. & James, Mosses of N. America, 160.

Didymodon caespitosus, Mitt. Journ. Linn. Soc. VIII, 18.

Vancouver Island. (*Lyall*.) On rocks near Oak Bay, Victoria, Vancouver Island, and on Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. (*Macoun*.)

53. DRUMMONDIA, Hook.

- (308.) **D. clavellata**, Hook.; Lesq. & James, Mosses of N. America, 160; Canadian Musci, No. 525; Drumm. Musc. Bor.-Am. No. 62.

On trees, Upper Canada (Ontario.) (*Drummond*.) On trees in the thick woods at Owen Sound, and in woods at Port Dover, Ont. (*Macoun*.)

Var. **Canadensis**, Kindb. (n. var.)

Differs in the leaves being larger and longer, also in the monœcious inflorescence.

On trees, Pelee Island, Lake Erie, June 16th, 1882. (*Macoun*.)

54. ULOTA, Mohr.

- (309.) **U. Drummondii**, Brid.; Lesq. & James, Mosses of N. America, 161.

Canada. (*Drummond*.) Miquelon Island. (*Delamare*.) On trees at New Harbor and Shoal Harbor, Newfoundland. (*Rev. A. Waghorne*.)

- (310.) **U. Ludwigii**, Brid.; Lesq. & James, Mosses of N. America, 161; Canadian Musci, No. 112.

Orthotrichum Ludwigii, Drumm. Musc. Bor.-Am. No. 146.

Upon trees about Lake Superior. (*Drummond*.) Pictou, N.S. (*McKay*.) On trees, Bass River, Fredericton and Grand Lake, N.B. (*Fowler's Cat.*) On trees, Tobique River, N.B. (*Hay*.) On trees, Tay, York Co. and Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On trees at Whycocogmah, Cape Breton; Jupiter River, Anticosti; and along Ste. Anne des Monts River, Gaspé Co., Que.; on trees, Rustico Bay, P.E.I.; on trees, Sudbury Junction and at Elliott's Falls, Victoria Co., Ont. (*Macoun*.) On trees at New Harbor, Topsail and Blaketown, Newfoundland. (*Rev. A. Waghorne*.)

- (311.) **U. curvifolia**, Brid. ; Lesq. & James, Mosses of N. America, 161.

Canada. (*Drummond* fide *Schimp.*) Shore of Lake Huron opposite the Fishing Islands, Bruce Co., Ont. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (312.) **U. Bruchii**, Hornsch. ; Lesq. & James, Mosses of N. America, 162 ; Canadian Musci, No. 453, in part.

On leaning trees by a brook a little above Port Dover, Lake Erie, Ont. (*Macoun.*) Upper Canada (Ontario.) (*Drummond.*) On small trees at Coquihilla River near New Westminster Junction, B.C. (*Macoun.*) New Harbor, Newfoundland. (*Rev. A. Wagborne.*)

- (313.) **U. obtusiuscula**, C. M. & Kindb., (n. sp.) ; Canadian Musci, No. 523.

U. Bruchii, Canadian Musci, No. 453, in part.

Nearly allied to *Ulota Bruchii*, differing principally in the leaves being less narrowed sub-obtuse, also in the longer collum of the wide-mouthed, not constricted capsule.

On small maple trees in thickets along the Coquihilla River near New Westminster Junction, B.C., April 26th, 1889. (*Macoun.*) On trees near Fort Rupert, Vancouver Island, 1885. (*Dawson.*)

- (314.) **U. subulata**, C. M. & Kindb., (n. sp.)

Tufts small, stem slender, sparingly short-branching, when dry sub-julaceous. Leaves small, when moist squarrose, patent, very papillose, from a perfectly ventricose base narrowed into the subulate-piliform acumen, flexuous, erect at the margins; costa very thin, rufescent, vanishing in the acumen; cells uniform, comparatively large and incrassate. Capsule small, cylindric-clavate; lid apiculate; pedicel long.

This species has nearly the habit of *Macrocoma*, a section of the genus *Macromitrium*, C. Mueller.

On small trees in thickets, Black's Farm, along the Coquihilla River, near New Westminster Junction, B. C., April 26th, 1889. (*Macoun.*)

- (315.) **U. subulifolia**, C. M. & Kindb., (n. sp.)

Differs from *Ulota subulata* in the stem being more branched, the leaves when dry twisted or subcrisped, sparingly papillose, revolute at the basal margin at least at one side; lower basal cells elongate,

alar indistinct; capsule very small, short-obovate, costate, finally sub-cylindric; pedicel not very long; calyptra nearly naked.

On small trees in thickets, Black's Farm, along the Coquihilla River, near New Westminster Junction, B. C., April 26th, 1889. (*Macoun*.)

(316.) ***U. scabrada***, Kindb., (n. sp.)

U. Americana, Canadian Musci, No. 115.

Tufts large and dense, blackish brown below, green or dark green above. Stem much divided. Leaves crisped when dry, squarrose-falcate when moist, very papillose and opaque, revolute from the base to the middle, comparatively short (as in *U. curvifolia*), from an enlarged base suddenly sublinear, nearly obtuse; basal cells elongate, alar or marginal distinct and hyaline. Capsule sub-oblong, passing into the long collum; teeth not reflexed, pale; calyptra very hairy, lobate; pedicel long.

This fine species resembles *U. crispa* more than *U. curvifolia*, and is not much allied to the last. The true *Ulota curvifolia* has the leaves straight and erect-patent when moist, and faintly twisted when dry.

Abundant on immense boulders between Cathedral Mountain and Mount Stephen three miles below Hector, Rocky Mountains, July 29th, 1885; also in the same place and on boulders by the torrent at Hector, Aug., 1890. (*Macoun*.)

(317.) ***U. Americana***, Mitt.; Lesq. & James, Mosses of N. America, 162; Mitt. Journ. Linn. Soc. VIII., 26.

U. Hutchinsiae, Schimp.; Canadian Musci, No. 117.

Orthotrichum Hutchinsiae, Drumm. Musc. Bor.-Am. No. 147.

On rocks at Bass River, Kent Co., N.B. (*Fowler's Cat.*) On rocks at Truro, N.S.; and at Madeline River, Gaspé Co., Que.; quite common on rocks along the north shore of Lake Superior, especially above Michipicotin. (*Macoun*.) Upon rocks, rarely on trees, Lake Superior. (*Drummond*.) Pictou, N.S. (*McKay*.) Lake Huron. (*Dr. Todd*.) British America. (*Drummond*, No. 153), with *U. Bruchii* and *U. crispa*. (*Mitten*.) Lindberg makes out No. 153 to be *U. crispa* var. *minor*, Lesq. & James which these authors make theirs to be. The following copy of Drummond's ticket may throw some light on the seeming difficulty. "On trees in Upper Canada, and upon rocks called Hell's Gate, below Norway House" (on Hay's River). It is extremely probable that Drummond's No. 153 that fell into the hands of Mr. Mitten had a specimen gathered at "Hell's Gate," and which he named *U. Americana*, the other being as Lesq. & James, say *U. crispa* var. *minor*. I have never observed a species of *Ulota* that

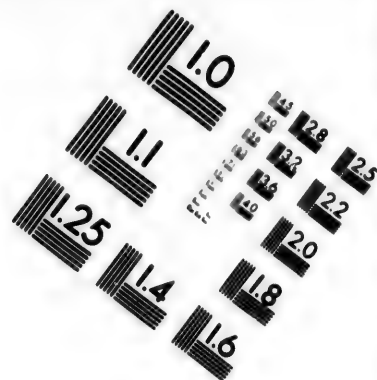
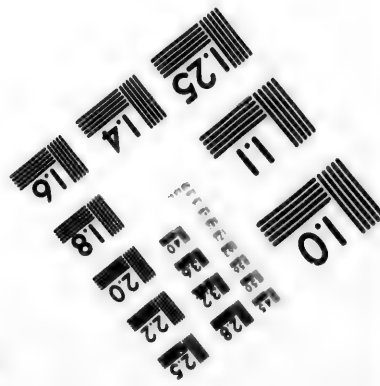
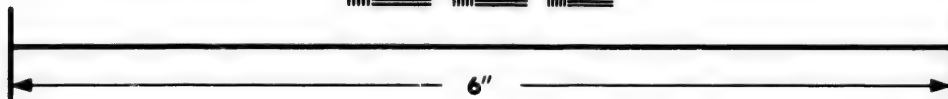
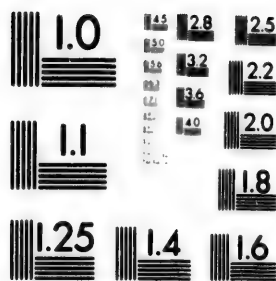


IMAGE EVALUATION TEST TARGET (MT-3)



Photographic Sciences Corporation

**23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503**



grew indiscriminately on rocks and trees, and therefore, propose to place *U. Americana* at "Hell's Gate," and hence a rock species.

- (318.) ***U. crispa***, Brid. ; Lesq. & James, Mosses of N. America, 162 ; Canadian Musci, No. 113, in part.

On trees, Tay Forks, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On trees along the Tobique River, N.B. (*Hay.*) On trees, Bass River, Kent Co., also at Fredericton and Grand Lake, N.B. (*Fowler's Cat.*) On trees at Pirate's Cove and Truro, N.S. ; along the Gaspé coast, Que. ; and frequent on trees in Hastings and Addington counties, Ont. (*Macoun.*) Very common on trees at New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Pictou, N.S. (*McKay.*)

- (319.) ***U. intermedia***, Schimp. Syn. (ed. II.) 305 ?

U. crispa var. *minor*, Lesq. & James, Mosses of N. America, 162.

U. crispa, Canadian Musci, No. 113, in part.

Orthotrichum crispum, Drumm. Musc. Bor.-Am. No. 153, in part.

On trees in Upper Canada (Ontario). (*Drummond.*) On trees near Belleville, Hastings Co., Ont. (*Macoun.*) Miquelon Island. (*Delàmare.*)

- (320.) ***U. crispula***, Brid. ; Lesq. & James, Mosses of N. America, 163 ; Canadian Musci, No. 114.

On trees at New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On trees along Jupiter River, Anticosti ; also along the Ste. Anne des Monts River, Gaspé Co., Que. ; at Sudbury Junction, abundant on trees in Hastings and Northumberland counties, and Owen Sound, Ont. (*Macoun.*) On beech trees, Bass River, Kent Co., N.B. (*Fowler's Cat.*) On trees, Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Pictou, N.S. (*McKay.*)

- (321.) ***U. phyllantha***, Brid. ; Lesq. & James, Mosses of N. America, 163 ; Canadian Musci, No. 116, in part.

On the bases of trees at Louisburg, Cape Breton Island ; at Yarmouth, N.S. (*Macoun.*) Miquelon Island. (*Delàmare.*)

- (322.) ***U. maritima***, C. M. & Kindb. (n. sp.)

U. phyllantha, Mitt. Journ. Linn. Soc. VIII., 26 ; Canadian Musci, No. 116, in part.

Differs from *Ulota phyllantha*, Brid., in the short oval capsule, with a short collum, the pedicel shorter and thicker, curved when moist,

the leaves long, attenuate to the subulate apex, distinctly papillose, the costa narrower, rough at back.

This species differs from the preceding species in the curved pedicel of the capsule; it has not hitherto been found fruiting in Europe. The allied *Uloa phyllantha* has the leaves nearly sublinear above the middle, short-acuminate and obtuse, faintly papillose, the costa smooth at back, the capsule longer with a long collum and a long, fine and straight pedicel; it grows, probably, always on trees; *U. maritima* is only found on rocks near the sea; also in Sweden, &c.

On rocks surrounded by the tide at Hastings, B.C.; also on rocks close to the sea at Vesuvius Bay, Salt Spring Island, Gulf of Georgia, May 9th. 1887; and at Comox, Vancouver Island, April 30th, 1887. (*Macoun*.) On rocks, Texada Island, B.C. 1885. (*Dawson*.) Ounalaska Island, Behring Sea and Kadiak, Island, Alaska. 1891. (*J. M. Macoun*.) Miquelon Island. (*Delamare*.)

(323.) **U. camptopoda**, Kindb. (n. sp.); Canadian Musci, No. 582.

Stem not creeping. Leaves, when dry, crisped, when moist patent or squarrose, often curved, faintly papillose, from a short dilated ventricose base, suddenly narrowed into the acute or subulate acumen, borders recurved at the base, and also often above on one side; outer basal cells, disposed in 2-5 rows, quadrate-rectangular thick-walled, inner narrow, orange, upper rotundate; costa elevate, stout percurrent. Capsule small, long-necked, when dry faintly plicate, narrow, sub-cylindric and not constricted below the mouth, obovate when moist; teeth bigerminate, pale, when dry recurved; cilia none; lid long-apiculate; pedicel long, but not much emergent, flexible, more or less curved or geniculate, in younger as well as in the dry state; calyptra densely hairy, covering the capsule.

Habit of *U. crispula*. Agrees with *U. maritima* in the curved pedicel; differs from *U. Ludwigii* in the narrower capsule. Growing together with *U. Ludwigii* on trees along the creek north of the tollgate on the Aylmer Road near Hull; also on the pales on the south west corner of the cemetery west of Hull on the Aylmer road, Que. 1891. (*Macoun*.)

(324.) **U. Barclayi**, Mitt.; Lesq. & James, Mosses of N. America, 164; Mitt. Journ. Linn. Soc. VIII., 26.

Sitka. (*Barclay*.)

(325.) **U. connectens**, Kindb. (n. sp.); Canadian Musci, No. 557.

Orthotrichum connectens, Kindb. Ott. Nat. IV., 64.

Monœcious. Tufts soft, pulvinate, green above, blackish below. Stems erect. Leaves from an ovate concave base linear-lanceolate,

when dry very much crisped, when moist subarcuate, short-attenuate to the acute apex; borders revolute above the base, for the greater part, at least on one side, distinctly papillose, also at the back; cells at basal wings sub-quadrate hyaline with incrassate transverse walls, those next the costa narrower, rectangular, in straight rows, the lowest orange; costa pale, subpercurrent. Male flower at the side of the female. Inner perigonal leaves broad, short-ovate, obtusate or suddenly short-acuminate; cells round only in the acumen, the others narrow, the lower basal wider and yellow; antheridia about 9, with several paraphyses. Perichetial leaves with sublinear basal cells. Capsule dark-brown, short subovoid, not contracted on the mouth, costate; pedicel short, scarcely emergent. Calyptra densely hairy.

This species is a true *Ulota*, although the revolute leaf-borders, the distinctly papillose cells and the short pedicellate capsule are more like to an *Orthotrichum*.

On cedar trees in Dow's Swamp near Ottawa; on trees at Owen Sound, Ont., Sept. 17th, 1890. (*Macoun.*)

55. ORTHOTRICHUM, Hedw.

(326.) *O. anomalum*, Hedw.; Lesq. & James, Mosses of N. America, 164; Canadian Musci No. 118, in part; Mitt. Journ. Linn. Soc. VIII, 24.

On rocks at Fredericton, N.B. (*Fowler's Cat.*) On rocks, McKay's Woods, Ottawa; on rocks, Gibson's Mountain, Prince Edward Co., Ont.; on rocks at Belleville and Shannonville, Hastings Co., Sudbury Junction and Lake Nepigon, Ont.; at Kananaskis River crossing of C. P. Ry., Rocky Mountains. (*Macoun.*) On rocks, Buffalo Lake and Clearwater River, lat. 56° N.W.T. (*J. M. Macoun.*) Saskatchewan, (*Bourgeau.*) Abundant on rocks at Kingston and Wolfe Island, Ont. (*Fowler.*) Greenland. (*Fl. Gr.*)

Var. *Americanum*, Vent. (n. var.)

O. anomalum, Drumm. Musc. Bor.-Am., No. 148; Canadian Musci, No. 118, in part.

This is a form that has a yellow capsule and differs considerably from the normal form, in the well-evolute cilia.

Upon rocks; common. (*Drummond.*) On rocks along the shore of Lake Winnipegosis, Man.; on boulders and sandstone rocks, Hand Hills, Alberta. (*Macoun.*)

— Var.

O. Venturi, Canadian Musci, No. 455.

On cedar (*Thuja occidentalis*) rails, Simon Terrill's farm, Brighton, Northumberland Co., Ont., October 4th, 1888. (*Macoun.*)

(327.) *O. Blyttii*, Schimp.; Greenland Flora, 351.

Greenland. (*Fl. Gr.*)

(328.) *O. nudum*, Dicks, var. *Rudolphianum*, Schimp.

O. cupulatum, Drumm. Musc. Bor.-Am., No. 152.

Rocks near the Whirlpool, below Niagara Falls. (*Drummond.*) On rocks, Deer Park, Lower Arrow Lake, Columbia River; also along Kootanie Lake, B.C. (*Macoun.*)

(329.) *O. lævigatum*, Zett.; Lesq. & James, Mosses of N. America, 165; Canadian Musci, No. 454.

On rocks at Kicking Horse Lake, and on great boulders, three miles below, Rocky Mountains; common in tufts on boulders at Lytton, B. C.; also on rocks at Revelstoke, B. C.; Deer Park, Lower Arrow Lake, B. C. (*Macoun.*)

(330.) *O. cupulatum*, Hoffm.; Lesq. & James, Mosses of N. America, 165; Canadian Musci, No. 583.

On rocks, Mount Erskine, Vesuvius Bay, Salt Spring Island, Gulf of Georgia, B. C.; on rocks on mountain slopes at Spence's Bridge, B. C. (*Macoun.*) Baffin's Bay. (*Ross, Voy.*)

Var. *minus*, Sulliv.; Lesq. & James, Mosses of N. America, 165.

On trees, near the water, Presqu'île Point, Lake Ontario, Aug. 16th, 1868. (*Macoun.*)

(331.) *O. Sturmii*, Hoppe & Hornsch.; Lesq. & James, Mosses of N. America, 166.

On rocks at Hector, Rocky Mountains; on rocks at Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

(332.) *O. Texanum*, Sulliv.; Lesq. & James, Mosses of N. America, 166; Canadian Musci, No. 119.

The stomata are superficial; the lower leaf-cells dark orange.

On rocks in the Coast Range a few miles above Yale; on rocks,

Lake Mara, Sicamous, B.C.; and on rocks near Victoria, Vancouver Island. (*Macoun.*)

Var. **globosum**, Lesq.; Lesq. & James, Mosses of N. America, 166.

O. Texanum, Canadian Musci, No. 119, in part.

On rocks at Agassiz and Yale, B.C. (*Macoun.*)

(333.) **O. Grœnlandicum**, Berggr.; Greenland Flora, 351.

Holstensborg, Greenland. (*Fl. Gr.*)

(334.) **O. Breutelii**, Hampe; Greenland Flora, 350.

Apparently common in Greenland. (*Fl. Gr.*) Frederickshaab. (*Rosenvinge.*)

(335.) **O. Barthii**, Sendtn.; Greenland Flora, 351.

Island of Amitsuavsuk, Greenland. (*Fl. Gr.*)

(336.) **O. rupestre**, Schleich.; Lesq. & James, Mosses of N. America, 167.

O. rupicola, Drumm. Musc. Bor.-Am., No. 156.

O. Watsoni, Canadian Musci, No. 121.

On very large boulders about three miles below Hector and at Banff in the Rocky Mountains; on rocks at Sicamous, Revelstoke and Yale, B.C. (*Macoun.*) Upon rocks amongst the Rocky Mountains. (*Drummond.*)

(337.) **O. affine**, Schrad.; Lesq. & James, Mosses of N. America, 168; Drumm. Musc. Bor.-Am., Nos. 150 and 151.

On trees, Cove Head, Prince Edward Island, July 5th, 1888. (*Macoun.*) Upper Canada (Ontario), and about Lake Superior, on trees. (*Drummond.*) Trunks of trees, Lake Superior. (*Agassiz.*) Smith's Sound, between Lat. 78°-82°. (*Dr. Hayes.*)

(338.) **O. alpestre**, Hornsch.; Lesq. & James, Mosses of N. America, 168.

O. affine, Drumm. Musc. Bor.-Am., No. 149.

Upon trees; from Upper Canada (Ontario) to the Rocky Mountains. (*Drummond.*)

- (339.) **O. speciosum**, Nees; Lesq. & James, Mosses of N. America, 169; Canadian Musci, No. 120; Drumm. Musc., Bor-Am., Nos. 158 and 155.

O. elegans, Schw.; Mitt., Journ. Linn. Soc., VIII., 24; Drumm. Musc. Bor-Am., No. 155.

O. leiocarpum, Canadian Musci, No. 126, in part.

Upon trees, Upper Canada (Ontario). (*Drummond.*) On trees, Bass River and at Fredericton, N.B. (*Fowler's Cat.*) On trees, Dalhousie and Pictou, N.S. (*McKay.*) Tadoussac, Que. (*St. Cyr.*) On logs and trees, Gaspé Co., Que.; on trees at Ottawa and Owen Sound, Ont.; on trees, Lake Winnipegosis, Man.; on trees at Comox and Victoria, Vancouver Island; also at Sicamous, B.C. (*Macoun.*) On trees, Canaan Forks, Queen's Co., N.B.; on trees, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On trees at Bass River and Fredericton, N.B. (*Fowler's Cat.*) Abundant on trees in various parts of Prince Edward Island; on trees, coast of Gaspé Co., Que.; Belleville and Owen Sound, Ont.; on trees near Green Lake, Saskatchewan; at Morley near the Rocky Mountains; at Lesser Slave Lake, N.W.T. (*Macoun.*)

- (340.) **O. Braunii**, Bruch & Schimp.; Bryol. Europ.

On trees, near Brackley Point, Prince Edward Island, August 2nd, 1888. (*Macoun.*)

- (341.) **O. Killiasii**, C. Muell.; Greenland Flora, 350.

Disco Island. Greenland. (*Fl. Gr.*)

- (342.) **O. sordidum**, Sulliv. & Lesq.; Lesq. & James, Mosses of N. America, 170; Canadian Musci, No. 122. (?)

On trees, Bass River, Kent Co., N.B. (*Fowler's Cat.*) On trees at Campbellton, N.B.; common at Ottawa and Sudbury Junction, Ont.; quite common on maple trees at Goulais Bay, Lake Superior. (*Macoun.*) On trees at Tay Forks, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) All these references are doubtful, as the specimens remain undecided.

- (343.) **O. Ohlense**, Sulliv. & Lesq.; Lesq. & James, Mosses of N. America, 170.

O. pilocarpum, Canadian Musci., No. 123, in part.

On trees at Bass River, Kent Co., N.B. (*Fowler's Cat.*) On trees, Cove Head, Prince Edward Island; on trunks at Ottawa, Belleville and Owen Sound, Ont. (*Macoun.*) On trees, Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

(344.) *O. Schimperii*, Hamm.

O. fallax, Schimp.; Lesq. & James, Mosses of N. America, 171.

Not uncommon on trees at Ottawa; on fence rails at Carleton Place and on trees on Massasaqua Point, Bay of Quinte, Ont. (*Macoun.*)

(345.) *O. brachytrichum*, Schimp.; Lesq. & James, Mosses of N. America, 172.

O. obtusifolium, Drumm. Musc. Bor.-Am., No. 157.

Upon trees in the country extending from Upper Canada (Ontario), to the Rocky Mountains. (*Drummond.*)

I believe Drummond's specimen to be really *O. obtusifolium*.

(346.) *O. strangulatum*, Beauv.; Lesq. & James, Mosses of N. America, 172; Canadian Musci, No. 124.

On trees at Bass River and Fredericton, N.B. (*Fowler's Cat.*) On trees at Cove Head, P.E.I.; also at Pictou, N.S.; on trees in woods around Ottawa; at Belleville and Owen Sound, and also at Lake Nepigon, Ont. (*Macoun.*) On poplar trees at Pictou, N.S. (*McKay.*)

(347.) *O. tenellum*, Bruch; Lesq. & James, Mosses of N. America, 172.

On trees at London, Ont., 1889. (*J. Dearness.*)

(348.) *O. consimile*, Mitt.; Lesq. & James, Mosses of N. America, 173.

On trees, Vancouver Island. (*Lyall.*) We are not acquainted with this species.

(349.) *O. lonchothecium*, C. M. & Kindb. (n. sp.)

Differs from *Orthotrichum speciosum* in the capsule being shorter than the pedicel, when moist, and the calyptra narrower; the peristome erect when dry, the cilia of one row of cells.

On trees at the mouth of Krao Creek, Kootanie Lake, B.C., July 13th, 1890; also on trees at Banff, Rocky Mountains, 1891. (*Macoun.*)

(350.) *O. Roellii*, Vent. Bot. Can., 51 (1890), 6. (n. sp.)

O. lonchothecium, Canadian Musci, No. 497.

On rocks, Fort Chipewyan, Lake Athabasca, N.W.T.; on rocks at Yale, B.C., May 17th, 1875; also on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

(351.) **O. psilothecium**, C. M. & Kindb. (n. sp.)

Plants small, 1 cm. long or less, green. Leaves short oblong-lanceolate, obtusate or short-acuminate, sub-obtuse, revolute at the borders to the greater part, faintly papillose; costa percurrent. Capsule small, immersed, oblong not striate before sporosis, very short-necked; vaginula naked; calyptra slightly hairy at the blackish apex, finally glabrous and light-brown, narrow, covering the whole capsule; lid rostellate. Male flowers on distinct branches.

This species has the habit of *Orthotrichum fallax*, Schimp. (*O. Schimper*, Hamm.) We have not been able to examine the peristome and the stomata of the capsule, because only one capsule (in our specimens) is nearly ripe, the others are quite unripe.

On old fences along the Richmond Road, and near Rockcliffe, Ottawa; also on old fences at Carleton Place, August 26th, 1889. (*Macoun.*)

(352.) **O. cylindrocarpum**, Lesq.; Lesq. & James, Mosses of N. America, 173.

On rocks at the "Gap," Bow River Pass, Rocky Mountains. (*Macoun.*)

(353.) **O. psilocarpum**, James; Lesq. & James, Mosses of N. America, 173.

On trunks of trees on Pelee Point and Pelee Island, Lake Erie. (*Macoun.*)

(354.) **O. lelocarpum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 174.

O. striatum, Drumm. Musc. Bor.-Am., No. 154.

Upon trees in Upper Canada (Ontario), and about Lake Superior. (*Drummond.*) Lake Superior. (*Agassiz.*)

(355.) **O. pallens**, Bruch; Lesq. & James, Mosses of N. America, 175.

Pack River, British Columbia. (*Lyall.*)

(356.) **O. pulchellum**, Brunton Lesq. & James, Mosses of N. America, 175; Canadian Musci, No. 127.

O. consimile, Canadian Musci, No. 125.

O. Columbicum, Mitt. Journ. Linn. Soc., VIII., 24.

On trees, Vancouver Island. (*Lyall.*) On trees, quite common at Victoria, Nanaimo and Comox, Vancouver Island; also on trees both

sides of Burrard Inlet, B.C. (*Macoun.*) Coal Harbor, Alaska. (*Harrington.*)

- (357.) ***O. canum***, Mitt.; Lesq. & James, Mosses of N. America, 176; Mitt. Journ. Linn. Soc., VIII., 26.

British North America. (*Drummond.*)

- (358.) ***O. obtusifolium***, Schrad.; Lesq. & James, Mosses of N. America, 177; Canadian Musci, No. 128.

British America. (*Drummond.*) On trees at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On poplar trees, Bass River and Fredericton, N.B. (*Fowler's Cat.*) On poplar trees at Kingston, N.S.; on same species of trees, Cove Head, P.E.I.; also at the mouth of Madeline River, Gaspé Co., Que.; on old rails and poplar trees at Ottawa, Belleville, Owen Sound, Lake Nipissing, and at Lake Nepigon, Ont.; on poplar trees, Kananaskis River, Rocky Mountains; also along Eagle River at Sicamous, B.C.; on trees at McLeod's Lake and along Peace River, Lat. 56°, B.C. (*Macoun.*) On trunks at London, Ont. (*J. Dearness.*)

- (359.) ***O. Jamesianum***, Sulliv.; Lesq. & James, Mosses of N. America, 177.

On rocks at Fort St. James, Northern British Columbia, and on rocks at Yale, and Spence's Bridge, B.C. (*Macoun.*) Doubtful specimens from Bow River Pass, Rocky Mountains.

- (360.) ***O. Lyellii***, Hook. & Tayl.; Lesq. & James, Mosses of N. America, 177; Canadian Musci, No. 130.

Very common on trees in many parts of Vancouver Island, especially on oak trees; on trees at Hastings, Burrard Inlet, B.C., 1889. (*Macoun.*)

Var. ***papillosum***, Lesq. & James, Mosses of N. America, 178; Canadian Musci, No. 464.

Quite common on trees in the vicinity of Victoria, Vancouver Island, 1887. (*Macoun.*)

Var. ***Pringlei***, C. Muell.

On rocks at Lytton, B.C., April 17th, 1889. (*Macoun.*)

- (361.) ***O. Canadense***, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 171.

Drummond's Rocky Mountain Collection, Nos. 149 and 151.

56. ENCALYPTA, Schreb.

- (362.) ***E. commutata***, Nees & Hornsch. ; Lesq. & James, Mosses of N. America, 180.

E. officis, Drumm. Musc. Bor.-Am., No. 49.

Rocks and banks amongst the Rocky Mountains. (*Drummond.*)

- (363.) ***E. vulgaris***, Hedw. ; Lesq. & James, Mosses of N. America, 181.

Alaska. (*Lesq. & James.*) Under ledges of limestone rocks at the Ferry Crossing opposite Belleville, Ont. ; and on limestone rocks at Leamy's Lake, near Ottawa. (*Macoun.*)

- (364.) ***E. rhabdocarpa***, Schwaegr ; Lesq. & James, Mosses of N. America, 181 ; Canadian Musci, No. 131 ; Drumm. Musc. Bor.-Am. 51.

Rocks and banks amongst mountains. (*Drummond.*) On rocks, Falls of Ste. Anne des Monts River, Gaspé Co., Que. ; on stones along Peace River below the mouth of Smoky River ; on loose stones and gravel, Cypress Hills, Alberta ; crevices of rocks "Dry Cañon," discharge of Devil's Lake, at Banff, Silver City, and Hector, Rocky Mountains, also in the foothills at Morley ; along the Telegraph Trail near Quesnel, B.C. ; on earth, rocky slopes near Kamloops, B.C. (*Macoun.*) Nulato. (*Roth. Alask.*) Clavering Island, Greenland. (*Fl. Gr.*)

- (365.) ***E. subspathulata***, C. M. & Kindb. (n. sp.)

E. spathulata, Canadian Musci, No. 421.

Monœcious. Stem very short, about 0.5 cm. high. Leaves bright green, spathulate or lingulate, twisting when dry, the upper spreading when moist ; inner basal cells short-rectangular, smooth and hyaline, finally red-brown, the outer ones very much longer, narrower and yellowish ; costa faintly reddish below, yellow above, long-excurrent. Capsule cylindrical, short-necked, smooth or finally furrowed when dry ; peristome pale, partly incomplete and membranose, but distinct and high ; calyptra small, papillose in the narrower part, yellowish-green, not covering the whole capsule, not fringed ; pedicel red.

Nearly allied to *E. vulgaris* but it has the peristome merely present. the calyptra longer, and the upper leaves not spreading. The true *E. spathulata*, C. Muell., has a shorter capsule without a peristome.

Quite common on boulders on the sides of ravines near the Fraser River, below Lytton, B.C., April 17th, 1889 ; on earth near McLeod's Lake, B.C. Lat. 55°. June 25th, 1875. (*Macoun.*)

(366.) *E. leiomitra*, Kindb. (n. sp.)*E. rhabdocarpa*, Schw. var. *leiomitra*, Kindb. Out. Nat. Vol. IV. 61.

Nearly allied to *E. rhabdocarpa* but differing in the leaves being shorter, often subspathulate, with the costa vanishing at the apex, peristomial teeth nearly blunt, calyptra not papillose, the spores larger.

On rocks along the Clearwater River, Athabasca. Lat. 57°. July 11th, 1888. (*J. M. Macoun.*)

(367.) *E. Macounii*, Aust.; Lesq. & James, Mosses of N. America, 182; Canadian Musci, No. 133.*E. ciliata*, Drumm. Musc. Bor.-Am., No. 50.

On rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Crevices of rocks, Tobique River, N.B. (*Hay.*) On rocks along the Gaspé coast, Que.; quite common on rocks at Shannonville, and at Leamy's Lake and Rockcliffe, Ottawa; on earth at Pelee Point, Lake Erie; and in crevices of rocks, Lake Nepigon; also abundant on rocks at Fort Chipweyan, Lake Athabasca; also on rocks at Hector, Rocky Mountains; on rocks, Deer Park, Lower Arrow Lake; on rocks at Stewart's Lake Mountain, B.C.; quite common on damp rocks at Agassiz, Cache Creek and Sicamous, B.C.; very abundant on rocks at Departure Bay and Victoria, Vancouver Island. (*Macoun.*) Rocks and banks amongst the Rocky Mountains. (*Drummond.*) Unalaska and Kadiak Islands, Behring Sea, 1891. (*J. M. Macoun.*) Rocky ledges, Mount McKay, near Fort William and Kakabeka Falls, Lake Superior. (*Mrs. G. E. Britton.*) Greenland. (*Fl. Gr.*)

(368.) *E. ciliata*, Hedw.; Lesq. & James, Mosses of N. America, 182 Canadian Musci, No. 132.

Encalypta ciliata, Hedw., and *E. Macounii*, Aust., are very difficult to distinguish apart. The descriptions of the best authors are also not consistent. *Schimper* in synops. muscor. Europ. p. 343, says: "Peristomium siccitate capsulam horizontaliter claudens, humiditate patens;" *Braithwaite*, Brit. Moss-flora, p. 283, "peristome when dry horizontally closing the capsule, patent when moist;" Lesq. & James, Mosses of N. America, p. 182, "peristome spreading when dry;" Boulay, Muscinées de la France, p. 314, "dents du peristome dressées à l'état sec, inflechies en voûte surbaissée à l'état humide." It is probable that the authors are confounding both species, also occurring in Europe. *E. ciliata* is principally found growing in the lower mountain districts. *E. Macounii* seems to be an alpine species also collected by Kindberg in the Norwegian Alps and considered as a new species, *E. borealis*, Kindb.

Laubm. Schwed. & Norweg., but exactly agreeing with the original specimens of *E. Macounii* sent by Prof. Macoun. The description, made by Austin, cited by Lesq. & James, is, however, not completely exact: "calyptra densely papillose, pedicel reddish, papillose, the leaves muticous;" such characters are not to be found, the calyptra and the yellow pedicel are nearly smooth as in the true *E. ciliata*, to which the descriptions of the peristome by Schimper and Braithwaite probably belong. The descriptions by Lesq. & James and Boulay could partly be referred to *E. Macounii*, although all authors agree in the description of the capsule of *E. ciliata*, "without a distinct collum"; *E. Macounii* has a distinct collum and the margin of the leaves distinctly reflexed. I possess no specimens of the true *E. ciliata* from North America. It may not occur there.

(369.) *E. leiocarpa*, Kindb. Bull. Torr. Bot. Club. XVII. 273.

Monœcious. Stem 3-4 cm. high, dichotomously branched, radiculose. Leaves erect-patent, lingulate, faintly revolute nearly all around, without a hair-point; the lower decolorate brown, subacute, incurved; the comal larger, green, obtuse, slightly twisted; basal cells hyaline, the marginal very papillose; costa faintly papillose, not excurrent, in the lower leaves brown, in the comal green or reddish at the base. Perigonal leaves with a short thick tip. Capsule straight, smooth, cylindric with a short apophysis; peristome simple, orange; pedicel red; calyptra papillose all around, not fringed.

This species, in habit, resembles *E. streptocarpa*, but the capsule and the peristome are very different, nearly as in the true *E. longipes*, Mitt., by Lesq. & James considered as *E. procera*, distinguished by the twisted capsule and the double peristome.

Crevices of rocks summit of Mount Queest, Gold Range, B.C. Alt. 6,500 feet. (*J. M. Macoun.*)

(370.) *E. longipes*, Mitt. Journ. Linn. Soc. VIII. 29; Canadian Musci, No. 474.

Stem about 2 cm. high or lower, branched and radiculose. Leaves erect-patent, narrow, sublingulate, revolute all around, short-acuminate, obtusate or sub-acute, without a hairpoint; the lower decolorate brown, incurved, the upper green, irregularly crisped; lower basal cells hyaline.

Differs from *Encalypta leiocarpa* principally in the stem being shorter, the leaves short-acuminate or subacute, costa very rough, narrowed from the base, the calyptra regularly lacinate, very rough and subspinulose above, blackish to a third of the apex, the capsule

included. The authentic specimens of Drummond were consulted in the collections of Dr. C. Mueller.

Quite common along the edge of the torrent at Hector, and on rocks in the "Dry Cañon," discharge of Devil's Lake, Rocky Mountains. (*Macoun.*)

- (371.) ***E. procera***, Bruch ; Lesq. & James, Mosses of N. America, 182 ; Canadian Musci, No. 565.

E. streptocarpa, Drumm. Musc. Bor.-Am., No. 48.

Rocks and banks amongst the Rocky Mountains. (*Drummond.*) Crevices of rocks, Lake Nepigon, Ont. ; on wet rocks near Hector and at the "Gap," Rocky Mountains ; also on the bank of the Columbia River at Revelstoke, B.C. 1890. (*Macoun.*) Clavering Island, Greenland. (*Fl. Gr.*)

- (372.) ***E. Selwyni***, Aust. ; Lesq. & James, Mosses of N. America, 183 ; Canadian Musci, No. 134.

On rocks at Hector, Rocky Mountains ; on earth at C  che Creek and Quesnel, B.C., and at Lesser Slave Lake, N.W.T. ; also on rocks in the vicinity of Victoria, Vancouver Island. (*Macoun.*)

- (373.) ***E. streptocarpa***, Hedw. ; Lesq. & James, Mosses of N. America, 183 ; Canadian Musci, No. 135.

On rocks at Leamy's Lake near Ottawa ; abundant on limestone rocks at Owen Sound and at the Fishing Islands, Lake Huron ; on rocks, Kananaskis, Rocky Mountains. (*Macoun.*)

- (374.) ***E. cucullata***, C. M. & Kindb. (n. sp.) ; Canadian Musci, No. 491.

Mon  cious. Leaves cucullate, the perichetial ones long-acuminate acute with a long hair-point ; costa percurrent, red only at the base ; calyptra papillose all around.

This species is nearly allied to *E. procera* which has the upper leaves, also the perichetial, obtuse or subacute, the costa in most leaves red for the whole length.

On earth along the west bank of the Columbia River, at Revelstoke, B.C., May 9th, 1890. (*Macoun.*)

57. MERCEYA, Schimp.

- (375.) **M. (Scopelophila) latifolia**, Kindb., Bull. Torr. Bot. Club, XVI., 94; Canadian Musci, No. 459.

Densely caespitose. Plants 1-2 cm. high, brown-ferruginous below, green at the tips, divided, at the base radiculose. Leaves quite smooth, spatulate-lingulate, obtusate or sub-acute, entire, slightly reflexed at base, plane above, broad-bordered with greater, orange-colored cells; basal cells narrow, upper small and round; costa percurrent or scarcely excurrent. Habit of *Barbula ruralis*.

On the upper slopes of Mount Finlayson near Goldstream, Vancouver Island, May 18th, 1887. (*Macoun.*) This fine species was found in California (Herb. *C. Mueller*) but not described. (*Kindberg.*)

X. TETRAPHIDEÆ.**58. TETRAPHIS, Hedw.**

- (376.) **T. pellucida**,⁵ Hedw.; Lesq. & James, Mosses of N. America, 186; Canadian Musci, No. 136; Drumm. Musc. Bor.-Am., No. 31.

About the roots of trees in the country extending from the Atlantic to the Rocky Mountains. (*Drummond.*) Chicken Bay, Trinity Bay and Green Harbor, Newfoundland. (*Rev. A. Waghorne.*) Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) On rotten wood, common, N.B. (*Fowler's Cat.*) On decaying stumps, Tobique River, N.B. (*Hay.*) Common on old stumps at Canaan Forks, N.B. (*J. Moser.*) On the bases of rotten stumps in swamps across the continent. Ste. Anne des Monts River, Gaspé Co., Que.; quite common on Prince Edward Island; abundant at Ottawa, Belleville, Carleton Place, Lake Nipissing, Owen Sound, Wooler, Port Dover, Leamington and Lake Nepigon, Ont.; woods, shore of Lake Winnipegosis, Mar.; Columbia River at Donald and Revelstoke, also at Quesnel and Sicamous, B.C.; at Comox, Vancouver Island. (*Macoun.*) Saskatchewan. (*Bourgeau.*) Athabasca River, N.W.T. (*J. M. Macoun.*) Very common on stumps in swamps at London, Ont. (*J. Dearness.*) Sitka. (*Roth. Alask.*) Mountains of British Columbia. (*Lyall.*)

- (377.) **T. geniculata**, Girgens.; Lesq. & James, Mosses of N. America, 187; Canadian Musci, No. 422.

Moose River. (*Lyall.*) Sitka. (*Rothrock.*) On old logs in a swamp at Revelstoke, Columbia River; also in a swamp at Craig-

ellachie, Eagle Pass, and at Hastings on Burrard Inlet, B.C. (*Macoun.*) Sitka and Prince of Wales Island. 1891. (*J. M. Macoun.*) Appears to be common at Trinity Bay, Newfoundland. (*Rev. A. Waghorne.*)

XI. SCHISTOSTEGÆ.

59. SCHISTOSTECA, Mohr.

- (378.) **S. osmundacea**, Web. & Mohr; Lesq. & James, Mosses of N. America, 188; Canadian Musci, No. 137.

On the earth among the roots of turned-up stumps at Sudbury Junction, Ont.; at Castle Mountain, Rocky Mountains; Six-Mile and Beaver creeks and Roger's Pass, Selkirk Mountains; Revelstoke, and at Hastings, Burrard Inlet, B.C.; McLeod's Lake, Northern British Columbia. (*Macoun.*)

XII. SPLACHNÆ.

60. DISSODON, Grev. & Arn.

- (379.) **D. Froelichianus**, Grev. & Arn.; Lesq. & James, Mosses of N. America, 190; Canadian Musci, No. 138.

Splachnum Froelichianum, Drumm. Musc. Bor.-Am., No. 44.

" " var. *elongata*, No. 45.

Summits of the Rocky Mountains; not rare upon the turfy soil (44); alpine marsh in the Rocky Mountains. (45) (*Drummond.*) Wet slopes at the summit of Copper Mountain, Bow River Pass, and at Lake Agnes near Laggan, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (380.) **D. Hornschuchii**, Grev. & Arn.; Lesq. & James, Mosses of N. America, 189.

Systylium eplachnoides, Drumm. Musc. Bor.-Am., No. 46.

Summit of the (Rocky) mountains, in turfy soil, along with No. 44. (*Drummond.*)

- (381.) **D. splachnoides**, Grev. & Arn.; Lesq. & James, Mosses of N. America, 190; Canadian Musci, No. 139.

Weisia turbinata, Drumm. Musc. Bor.-Am., No. 64.

Marshy spots near York Factory, Hudson Bay. (*Drummond.*) Boggy soil, summit of Mount Albert, Gaspé Co., Que., alt. 4,000 feet;

mountain bogs at Hector, Rocky Mountains ; and on Avalanche Mountain in Roger's Pass in the Selkirks ; also in the Gold Range north of Griffin Lake, B.C. ; alt. 7,000 feet. (*Macoun.*) Godhavn, Greenland. (*Fl. Gr.*)

61. TAYLORIA, Hook.

- (382.) **T. serrata**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 191 ; Canadian Musci, No. 140.

Centre Hill, New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Alaska. (*Kellogg.*) At Goldstream, near Victoria, Vancouver Island, and along a roadside near Vesuvius Bay, Salt Spring Island, Gulf of Georgia, B.C. (*Macoun.*) Prince of Wales Island, 1891. (*J. M. Macoun.*)

- (383.) **T. tenuis**, Schimp. ; Lesq. & James, Mosses of N. America, 191 ; Canadian Musci, No. 141.

Abundant in woods, Little Fox River, Gaspé Co., Que., July 28th, 1882 ; on earth in woods at Pirate's Cove, Straits of Canso, N.S. (*Macoun.*) Barrens near Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Greenland. (*Fl. Gr.*)

- (384.) **T. splachnoides**, Hook. ; Lesq. & James, Mosses of N. America, 191 ; Drumm. Musc. Bor.-Am., No. 47.

About the root of a decayed tree, among the Rocky Mountains ; found in one spot only, and there sparingly. (*Drummond.*) On rather dry rock covered with mosses, side of a ravine on Mount Albert, Gaspé Co., Que. (*J. A. Allen.*)

- (385.) **T. acuminata**, (Schleich.) Hornsch.

On damp rocks in the "Dry Cañon" near the discharge of Devil's Lake, Rocky Mountains, Aug. 10th, 1891. (*Macoun.*)

62. TETRAPLODON, Bruch & Schimp.

- (386.) **T. angustatus**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 192 ; Canadian Musci, No. 142.

Splachnum angustatum, Drumm. Musc. Bor.-Am., No. 42.

Mountain woods ; extremely common on the droppings of the fox and wolf. (*Drummond.*) At Madawaska, N.B. (*Brittain.*) On animal droppings, in pine woods chiefly, Rideau River, Lake Superior ;

Lake Nepigon, Ont., and Lake Winnipegosis, Man.; very common in the woods between Edmonton and Lesser Slave Lake; also at Canmore, Banff and Hector in the Rocky Mountains; at McLeod's Lake, lat. 55°, B.C. (*Macoun.*) Near Lily Lake, St. John, N.B. (*Hay.*) In woods, at Placentia Bay and New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (387.) **T. mnioides**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 192; Canadian Musci, No. 143.

Splachnum mnioides, Drumm. Musc. Bor.-Am., Nos. 40 and 41.

Common on animal droppings in the country extending from York Factory to the Rocky Mountains (Nos. 40 and 41). (*Drummond.*) Miquelon Island. (*Delàmare.*) Highland Park, St. John, and Tobique River, N.B. (*Hay.*) Paroquet Island, Labrador, and Table Top Mountain, Gaspé Co., Que. (*J. A. Allen.*) On animal droppings from Lake Superior and Lake Nepigon, westward in the wooded country to Lesser Slave Lake; Bow River Pass, Castle Mountain, Devil's Lake and Banff, Rocky Mountains. (*Macoun.*) New Harbor, and Centre Hill, Newfoundland. (*Rev. A. Waghorne.*) Sitka and Kotzebue Sound. (*Roth. Alask.*) St. Paul Island and Attu Island, Behring Sea. 1891. (*J. M. Macoun.*) Smith's Sound. (*Dr. Kane.*) Greenland. (*Fl. Gr.*)

- (388.) **T. australe**, Sulliv. & Lesq.; Lesq. & James, Mosses of N. America, 192.

On Isle Madame, Cape Breton, N.S. (*J. A. Allen fide Lesq. & James.*)

- (389.) **T. urceolatus**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 193.

Splachnum urceolatum, Drumm. Musc. Bor.-Am., No. 38.

Summits of the (Rocky) Mountains; (rare?) (*Drummond.*) Kotzebue Sound. (*Roth. Alask.*) St. Matthew Island, Behring Sea. 1891. (*J. M. Macoun.*)

63. SPLACHNUM, Linn.

- (390.) **S. Wormskjoldii**, Hornem.; Lesq. & James, Mosses of N. America, 194.

Peat bogs of Arctic America. (*Lesq. & James.*) Smith's Sound, between lat. 78°—82°. (*Dr. Kane.*) Jakobshavn, Greenland. (*R. Brown.*)

- (391.) **S. sphaericum**, Linn.; Lesq. & James, Mosses of N. America, 194; Canadian Musci, No. 144; Drumm. Musc. Bor.-Am., No. 35; var. *elongatum*, No. 36.

S. intermedium, Drumm. Musc. Bor.-Am., No. 39.

Mountain woods, common; on the droppings of buffalo (Nos. 35 and 36); York Factory on the dung of animals (No. 39). (*Drummond.*) On animal droppings at Swan Lake House, Man.; in woods at McLeod's Lake, lat. 55°, B.C.; around springs at Morley (station) and Hector, Rocky Mountains. (*Macoun.*) Norton Sound. (*Roth, Alaska.*)

- (392.) **S. vasculosum**, Linn.; Lesq. & James, Mosses of N. America, 194; Drumm. Musc. Bor.-Am., No. 34.

S. heterophyllum, (n. sp.) Drumm. Musc. Bor.-Am., No. 37.

York Factory, Hudson Bay; near a saline spring amongst the Rocky Mountains, where no other vegetable existed; and upon the dung of some animal. (*Drummond.*) Sitka. (*Bischoff.*) Smith's Sound. (*Dr. Kane.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) Godhavn, Greenland. (*Fl. Gr.*)

- (393.) **S. ampullaceum**, Linn.; Lesq. & James, Mosses of N. America, 194; Canadian Musci, No. 145.

Miquelon Island. (*Delàmare.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Swamps at Bocabee and St. John, N.B. (*Hay.*) On earth at Fredericton Junction, N.B. (*Fowler.*) Bogs, North Sydney, Cape Breton; Straits of Canso, N.S.; swamps along Jupiter River, Anticosti; and in swamps along Lake Nepigon, Ont. (*Macoun.*) In bogs, Portage La Loche, N.W.T. (*J. M. Macoun.*) On earth, Cooper's Pond and at New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (394.) **S. rubrum**, Linn.; Lesq. & James, Mosses of N. America, 195; Drumm. Musc. Bor.-Am., No. 32.

Bass River, Kent Co., N.B. (*Fowler's Cat.*) Lancaster, N.B. (*Hay.*) Shady woods amongst the (Rocky) mountains; on the droppings of animals, but rare. (*Drummond.*) In bogs, Portage La Loche, N.W.T. (*J. M. Macoun.*)

- (395.) **S. luteum**, Linn.; Lesq. & James, Mosses of N. America, 195; Drumm. Musc. Bor.-Am., No. 33.

Shady woods amongst the (Rocky) Mountains. (*Drummond.*) Woods along the Finlayson River, lat. 60° 30', N.W.T. (*Dawson.*)

- (396.) **S. melanocaulon**, Schw. ; Mitt. Journ. Linn. Soc., VIII. 22.

This species has been several times brought from Western North America ; and some specimens have been collected by Mr. Burke. (*Mitten.*)

64. **ÆDIPODIUM**, Schwaegr.

- (397.) **Æ. Griffithianum**, (Dicks.) Schw.

Greenland. (*Fl. Gr.*)

XIII. PHYSCOMITRIÆ.

65. **PHYSCOMITRIUM**, Brid.

- (398.) **P. immersum**, Sulliv. ; Lesq. & James, Mosses of N. America, 196.

On inundated alluvial soil (in small tufts) along the outlet of Leamy's Lake near Hull, Que., Oct. 4th, 1889. (*Macoun.*)

- (399.) **P. pyriforme**, Brid. ; Lesq. & James, Mosses of N. America, 197.

P. Hookeri, Canadian Musci, No. 146, in part.

On earth in the vicinity of Ottawa. (*Fletcher.*) Abundant on earth, in damp spots on the commons near the Railway Bridge in Belleville, Ont. (*Macoun.*) On earth at London, Ont. (*J. Dearness.*)

- (400.) **P. megalocarpum**, Kindb., Bull. Torr. Bot. Club, XVI., 94 ; Canadian Musci, No. 147.

Nearly allied to *Physcomitrium pyriforme*, (*Gymnostomum pyriforme*, Lindb.) ; leaves longer, more or less acuminate, distinctly yellow-margined ; cells smaller, the upper narrower ; capsule larger, sub-globose ; lid conic, without distinct beak ; calyptra unsymmetrical bilobed with a long acumen ; pedicel long.

Collected in May, 1875, and examined by Austin, who concluded it was a large variety of *P. pyriforme*. Lesq. & James make no mention of it. Remarkably fine specimens were collected again in damp places in meadows and pastures at Cedar Hill, near Victoria, Vancouver Island, May 16th, 1887. (*Macoun.*) Also found in Oregon (*Henderson herb. Cardot.*)

- (401.) **P. Hookeri**, Hampe ; Lesq. & James, Mosses of N. America, 198 ; Canadian Musci, 146, in part.

Gymnostomum latifolium, Drumm. Musc. Bor.-Am., No. 16.

Low points of the River Saskatchewan, near Carlton House. (*Drummond.*) On wet earth at Manitoba House, Lake Manitoba, Man. (*Macoun.*)

- (402.) **P. turbinatum**, C. Muell. ; Lesq. & James, Mosses of N. America, 198.

P. strangulatum, Kindb., Ott. Nat. Vol. IV. 62.

On earth at Port Stanley, Lake Erie, June 22nd, 1882. (*Macoun.*)
On earth in ditches at Port Dover and London, Ont. (*J. Dearness.*)

66. FUNARIA, Schreb.

- (403.) **F. calcarea**, Wahl. ; Lesq. & James, Mosses of N. America, 201.

F. Muhlenbergii, Drumm. Musc. Bor.-Am., No. 236.

Banks amongst the Rocky Mountains ; but rare. (*Drummond.*)

- (404.) **F. hygrometrica**, Sibth. ; Lesq. & James, Mosses of N. America, 202 ; Canadian Musci, No. 148 ; Drumm. Musc. Bor.-Am., No. 235.

In woods where trees have been burnt ; very abundant. (*Drummond.*) Pictou Co., N.S. (*McKay.*) On recently burnt ground, Bass River, N.B. (*Fowler's Cat.*) Very common at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Common on burnt earth in Quebec. (*St. Cyr.*) Miquelon Island. (*Delamare.*) On earth in damp, or wet, burnt woods, Salt Lake, Anticosti ; Cove Head, Prince Edward Island ; Fox River, Gaspé Co., Que. ; at Ottawa, Carleton Place, Belleville, Bismark, Owen Sound and Lake Nepigon, Ont. ; Manitoba House, Lake Manitoba, Man. ; at Morley, Banff and Hector, Rocky Mountains ; Roger's Pass, Selkirk Mountains ; at Revelstoke and Hastings, B.C. ; abundant on Vancouver Island at Victoria, Nanaimo and Comox. (*Macoun.*) Moist ground, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Buffalo Lake, N.W.T. (*J. M. Macoun.*) On earth near London, Ont. (*J. Dearness.*) Neighbourhood of Kingston, Ont. (*Prof. Fowler.*) Texada Island, Gulf of Georgia, B.C. (*Dawson.*) Iktigalik. (*Roth. Alaska.*) Greenland. (*Fl. Gr.*)

Var. **calvescens**, Bruch & Schimp.

On recently burnt ground at Bass River, N.B. (*Fowler's Cat.*)
Lac Bean, St. Francis, N.B. (*Hay.*)

XIV. BARTRAMIEÆ.

67. BARTRAMIA, Hedw.

- (405.) **B. Menziesii**, Turn. ; Lesq. & James, Mosses of N. America, 204.

Philonotis leiophylla, Kindb. MS. ; Canadian Musci, No. 151.

On rocks at Agassiz, B.C. ; very abundant on rocks in the oak woods, around Victoria, Vancouver Island. (*Macoun.*) Vancouver Island. (*Lyall.*) Western Russian America. (*Roth. Alaska.*)

- (406.) **B. subulata**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 204.

Sitka. (*Rothrock.*) Flower Bay, Alaska. (*Dall.*)

- (407.) **B. ithyphylla**, Brid. ; Lesq. & James, Mosses of N. America, 205 ; Drumm. Musc. Bor.-Am., No. 238.

Rocky Mountains ; rare. (*Drummond.*) On the margin of the Asulkan Glacier, and near the glaciers of Mount Cheops, Selkirk Mountains ; also on the Gold Range, north of Griffin Lake, B.C. ; alt. 7,000 feet. (*Macoun.*) Summit of Mount Queest, Gold Range ; alt. 6,000 feet, B.C. ; Oualaska, Behring Sea. 1891, (*J. M. Macoun.*) Cascade and Rocky Mountains. (*Lyall.*) Greenland. (*Fl. Gr.*)

- (408.) **B. Cederiana**, Swartz. ; Lesq. & James, Mosses of N. America, 205 ; Canadian Musci, No. 149.

B. gracilis, Drumm. Musc. Bor.-Am., No. 240.

Rocks at Tattagouche Falls, Gloucester Co., N.B. (*Fowler's Cat.*)
Rocks near St. John, N.B. (*Hay.*) Wet rocks, Gunn and Beesie rivers, Anticosti ; Straits of Canso and at Truro, N.S. ; on wet rocks, Ste. Anne des Monts River and on Mount Albert, Gaspé Co., Que. ; on rocks, McKay's Woods, Ottawa, and at Shannonville, Hastings Co., Ont. ; north shore of Lake Superior ; crevices of rocks at Hector, Rocky Mountains ; at Revelstoke and Agassiz, B.C. (*Macoun.*) British Columbia, near 49th parallel. (*Lyall.*) On earth near London, and at Point Edward, Ont. (*J. Dearness.*) Moist rocks ; common. (*Drummond.*)

Var. **minor**, Kindb. (n. var.)

On wet rocks near the snow on Cathedral Mountain near Hector, Rocky Mountains. (*Macoun.*) Summit of Mount Queest, Gold Range, B.C. Alt. 6,000 feet. (*J. M. Macoun.*)

- (409.) **B. pomiformis**, Hedw. ; Lesq. & James, Mosses of N. America, 206 ; Canadian Musci, No. 150 ; Drumm. Musc. Bor.-Am., No. 237.

Rocks and shady banks. (*Drummond.*) Pictou Co., N.S. (*McKay.*) Rocky places, Bass River, and St. John, N.B. (*Fowler's Cat.*) Crevices of rocks, Tobique River, N.B. (*Hay.*) Very common on rocks at Canaan Forks and Tay, N.B. (*J. Moser.*) Crevices of rocks, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On rocks, Cap Rouge, Que. (*St. Cyr.*) On rocks at London, Ont. (*J. Dearness.*) On damp rocks, Fox River, Gaspé Co., Que. ; rocky ledges near Chelsea, Que. ; also along the Moira River above the Railway Bridge at Belleville, Ont. ; fissures of rocks at Sudbury Junction, Ont. ; at Port Dover and Leamington, Lake Erie ; on damp rocks, Lake Athabasca ; on rocks in the Rocky and Selkirk Mountains ; at Pass Creek Falls, near Sproat and at Revelstoke, B.C. ; Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*) Crevices of rocks, Texada Island and Queen Charlotte Islands, B.C. (*Dawson.*) Pend d'Oreille River and Sumas Prairie, B.C. (*Lyall.*) Little Ridge, Chappal Arm, Newfoundland. (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*)

- (410.) **B. glaucoviridis**, C. M. & Kindb. (n. sp.)

Differs from *B. pomiformis* in its glaucous-green color, the leaves sheathing, not margined, suddenly short-cuspidate, the costa often excurrent. Monœcious.

On damp rocks about a mile above Revelstoke, along the Columbia River, B.C. May 5th, 1890. (*Macoun.*)

- (411.) **B. circinnulata**, C. M. & Kindb. (n. sp.)

Also allied to *B. pomiformis* but still more distinct than *B. glaucoviridis*. The leaves are green, loosely disposed, circinate, long-sheathing, very long-cuspidate ; costa longer excurrent. Probably dioecious.

On rocks by a small brook, west of Black's Hotel at Hastings on Burrard Inlet, B.C., April 6th, 1889. (*Macoun.*)

- (412.) **B. Halleriana**, Hedw. ; Lesq. & James, Mosses of N. America, 206 ; Drumm. Musc. Bor.-Am., No. 239.

Rocks about the Portage River, Rocky Mountains. (*Drummond.*)

(413.) **B. breviseta**, Lindb.

In crevices of rocks, Ounalaska, Behring Sea, August 23rd, 1891.
(*J. M. Macoun.*)

68. CONOSTOMUM, Swartz.

- (414.) **C. boreale**, Swartz; Lesq. & James, Mosses of N. America, 207; Drumm. Musc. Bor.-Am., No. 53; Canadian Musci, No. 205.

Near New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Summit of a mountain north of Smoking River, Rocky Mountains. (*Drummond.*) Summit of Mount Albert, Gaspé Co., Que.; crevices of rocks on the mountains north of Griffin Lake, Gold Range, B.C.; alt. 7,000 feet; on rocks, summit of Mount Arrowsmith, Vancouver Island, alt. 5,996 feet. (*Macoun.*) Alaska. (*Dall.*) Kotzebue Sound. (*Roth. Alask.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) Sabine Island, Greenland. (*Fl. Gr.*)

69. PHILONOTIS, Brid.

- (415.) **P. marchica**, Brid.

P. Macounii, Lesq. & James, Mosses of N. America, 208; Canadian Musci, No. 152.

Wet springy places, Oak Hills, Hastings Co., and in a ditch at Murray Town Hall, Northumberland Co., Ont.; not uncommon in mud and gravel along small rills and about springs around Victoria, Nanaimo and Nanaimo River, Vancouver Island; also by a little brook at Hastings, Burrard Inlet; and on the bank of the Columbia River at Revelstoke, B.C. (*Macoun.*)

- (416.) **P. fontana**, Brid.; Lesq. & James, Mosses of N. America, 209; Canadian Musci, No. 153.

Bartramia fontana, Drumm. Musc. Bor.-Am., No. 241.

Pictou Co., N.S. (*McKay.*) Vicinity of New Harbor, Bay Bull Arm and Blaketown, Newfoundland. (*Rev. A. Waghorne.*) Springy places; Molus River, Kent Co., also at Fredericton, N.B. (*Fowler's Cat.*) Moist places, Tobique River, N.B. (*Hay.*) Very common at Canaan Forks and Tay, N.B. (*J. Moser.*) On wet rocks, Cap Rouge, Que. (*St. Cyr.*) Miquelon Island. (*Delàmare.*) In springs and by brooks and on wet rocks across the continent. At Truro and Straits of Canso, N.S.; bogs Tignish, Prince Edward Island; common on the Gaspé coast, Que.

at Ottawa and Lake Nipissing and on Gull Lake, Frontenac Co., Ont.; abundant at Lakes Superior and Nepigon and westward; at Hector, Rocky Mountains; Columbia Valley at Donald, and at the Asulean Glacier, Selkirk Mountains; abundant at Revelstoke, on the Columbia River; in the Eagle Pass; at Quesnel on the Fraser; Hastings, and New Westminster, B.C.; abundant on Mount Benson and at Victoria, Vancouver Island. (*Macoun.*) Moist rocks, Crow's Nest Pass, Rocky Mountains and on the mountains at Adam's Lake, B.C.; alt. 5,000 feet. (*Dawson.*) On Mount Queest, Gold Range, B.C.; alt. 6,000 feet; Ounalaska, Behring Sea. 1891. (*J. M. Macoun.*) In springy wet places; common. (*Drummond.*) Rocky Mountains. (*Bourgeau.*) Chilkwkwayuk, B.C. (*Lyall.*) Greenland. (*Fl. Gr.*)

Var. **brachyphylla**, Kindb. (n. var.)

In bogs, Brackley Point, Prince Edward Island. June 28th, 1888. (*Macoun.*)

Var. **serrata**, Kindb. (n. var.)

Swamps in Roger's Pass, Selkirk Mountains. August 24th, 1885. (*Macoun.*) In boggy soil at Ounalaska and Atkah islands, Behring Sea, 1891. (*J. M. Macoun.*)

Var. **microblasta**, C. M. & Kindb. (n. var.)

Male flowers very small, brown; perigonal leaves all acute, strongly costate.

On damp earth along the railway track, Roger's Pass, Selkirk Mountains, B.C., 30th July, 1890. (*Macoun.*)

Var. **Columbia**, Kindb. (n. var.)

Lower leaves narrow; costa long-excurrent, perigonal leaves acute, or subacute.

On wet rocks below the Illicillewaet Cañon, at Revelstoke, B.C., May 18th, 1890. (*Macoun.*)

(417.) **P. glabriuscula**, Kindb. (n. sp.); Canadian Musci, No. 578.

Webera fontana, Kindb., Ott. Nat. Vol. IV. 62.

Tufts radiculose below, 4 cm. high. Stem slender. Leaves small, green, distant, spreading and straight when moist, indistinctly decurrent, short ovate-lanceolate, short-acuminate, acute, slightly papillose, pellucid, plane at the margins, not plicate, minutely serrulate princi-

pally above; cells oblong-hexagonal, the lower narrower, less chlorophyllose, costa subpercurrent. Habit of *Webera albicans*. Barren.

By springs in a gully, Canaan Forks, Queen's Co., N.B. January 2nd, 1890. (*J. Moser*.)

XV. MEESIEÆ.

70. CATOSCOPIUM, Brid.

- (418.) *C. nigratum*, Brid.; Lesq. & James, Mosses of N. America, 211; Canadian Musci, No. 154.

Weisia nigrita, Drumm. Musc. Bor.-Am., No. 73.

Common in swamps in the Rocky Mountains. (*Drummond*.) In boggy meadows, Lake Superior. (*Agassiz*.) Common in boggy and springy places throughout Canada. Bogs at Salt Lake and Gunn River, Anticosti; quite common along the shore at Red Bay and Fishing Islands, Lake Huron; wet rocks, shore of Lake Nepigon; abundant at Stephen, Banff and Hector, Rocky Mountains; in boggy soil near the Hot Springs, Kootanie Lake, B.C.; abundant in springs, Hudson Hope, Peace River, lat. 56°. (*Macoun*.) Godhavn, Greenland. (*Fl. Gr.*)

71. AMBLYODON, Beauv.

- (419.) *A. dealbatus*, Beauv.; Lesq. & James, Mosses of N. America, 211; Canadian Musci, No. 155.

Bryum dealbatum, Drumm. Musc. Bor.-Am., No. 249.

Canaan Forks and Tay, N.B. (*J. Moser*) Moist rocks among the Rocky Mountains; and about York Factory, Hudson Bay. (*Drummond*.) Peat bog near Ste. Anne des Monts, Gaspé Co., Que. (*J. A. Allen*.) Peat bog, Salt Lake, Anticosti; also in a bog at Kingston, N.S.; on clay around springs opposite Hudson Hope, Peace River, lat. 56°; boggy places at Morley Station, on tufa mounds at Banff and by springs at Hector, Rocky Mountains. (*Macoun*.)

72. MEESIA, Hedw.

- (420.) *M. uliginosa*, Hedw.; Lesq. & James, Mosses of N. America, 212; Canadian Musci, No. 156.

Bryum trichodes var. *longisetia*, Drumm. Musc. Bor.-Am., No. 247.

In swamps in the country extending from York Factory to the Rocky Mountains. (*Drummond*.) Peat bog near St. Anne des Monts,

Gaspé, Que. (*J. A. Allen*.) Boggy places at Truro, N.S.; wet bank of Jupiter River, Anticosti; along the Madeline and Fox rivers, Gaspé Co., Que.; marshes along Lake Huron at Red Bay, Bruce Co., Ont.; wet rocks, Lake Nipigon; peat bogs, House Mountain near Lesser Slave Lake, N.W.T.; swamps at Castle Mountain, Banff and Hector, Rocky Mountains; along the Columbia at Donald, B.C. (*Macoun*.) Boggy places at Dog Head, Lake Winnipeg; also on the Clearwater River, Athabasca. (*J. M. Macoun*.) Mooyie River, B.C. (*Lyall*.) Common; Greenland. (*Fl. Gr.*)

Var. **alpina**, Bruch & Schimp.

Bryum trichodes, Drum. Musc. Bor.-Am., No. 245.

Marshes among the Rocky Mountains. (*Drummond*.) Swamps at Kicking Horse Lake, Rocky Mountains. (*Macoun*.) Summit of Mount Queest, Gold Range, B.C. (*J. M. Macoun*.)

Var. **minor**, Bruch & Schimp.

Bryum trichodes var. *minor*, Drum. Musc. Bor.-Am., No. 246.

Moist places amongst the Rocky Mountains. (*Drummond*.) Ontario. (*Lesq. & James*.) Disco, Greenland. (*Fl. Gr.*)

(421.) **M. longisetia**, Hedw.; Lesq. & James, Mosses of N. America, 212.

Swamps, Queen's Co., N.B. (*McKay*.) Damp woods, Clifton, N.B. (*J. Wetmore*.) Abundant in a bog in Seymour West, Northumberland Co., Ont.; in bogs at the base of the Porcupine Mountains, Man. (*Macoun*.) Sabine Island, Greenland. (*Fl. Gr.*)

(422.) **M. Albertinli**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 213.

Bryum triquetrum, Drum. Musc. Bor.-Am., No. 244.

Swamps at York Factory and Cumberland House, on the Saskatchewan. (*Drummond*.) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes*.)

(423.) **M. tristicha**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 213; Canadian Musci, No. 157.

Swamps at Becscie River, Anticosti; abundant in a bog behind the Railway Station at Banff, and at Stephen, Rocky Mountains; in bogs at McLeod's Lake, lat. 55°, B.C. (*Macoun*.) In peat bogs between

Port Arthur and Port William. (*Mrs. E. G. Britton.*) Lake Superior.
(*Agassiz.*) Pack River, B.C. (*Lyall.*) Disco Island, Greenland.
(*Fl. Gr.*) In wet woods near London, Ont. (*J. Dearness.*)

73. PALUDELLA, Ehrh.

(421.) **P. squarrosa**, Brid. : Lesq. & James, Mosses of N. America,
214 ; Canadian Musci, No. 158.

Bryum squarrosum, Drum. Musc. Bor.-Am., No. 248.

Marshes near the Rocky Mountains; rare; and about York Factory,
(*Drummond.*) Bogs, Salt Lake, Anticosti; summit of Mount Albert,
Gaspé Co., Que.; in swamps at Stephen, Rocky Mountains; in peat
bogs, Telegraph Trail, Blackwater River, B.C. (*Macoun.*) Mountains
east of Adam's Lake, B.C.; alt. 6,500 feet. (*Dawson.*) Greenland.
(*Fl. Gr.*)

XVI. BRYEÆ.

74. MIELICHHOFFERIA, Hornsch.

(425.) **M. nitida**, Nees & Hornsch. Var **macrocarpa**, C. Muell.;
Lesq. & James, Mosses of N. America, 215.

Moss macrocarpa, Drum. Musc. Bor.-Am., No. 74.

Upon slate rocks, among the Rocky Mountains. (*Drummond.*)

(426.) **M. cuspidifera**, Kindb. (n. sp.)

Differs from *M. nitida* in the leaves being broad-ovate, suddenly
cuspidate, entire or slightly crenulate above, the cells a little wider
and the costa often percurrent.

On damp rocks beside the torrent at Hector, Rocky Mountains, alt.
5,000 feet. August 11th, 1890. (*Macoun.*)

75. LEPTOBRYUM, Schimp.

(427.) **L. pyriforme**, Schimp.; Lesq. & James, Mosses of N.
America, 215; Canadian Musci, No. 159.

Bryum pyriforme, Drum. Musc. Bor.-Am., No. 271.

In burnt woods; frequent. (*Drummond.*) Pictou Co., N.S. (*McKay.*)
Canaan Forks and Tay, N.B. (*J. Moser.*) On recently burnt soil,
Bass River, N.B. (*Fowler's Cat.*) Shaded ground, Tobique River,

N.B. (*Hay.*) On earth in woods near Quebec. (*St. Cyr.*) On burnt and damp soil across the continent. Brackley Point, Prince Edward Island; woods, Salt Lake, Anticosti; Mount Albert, Gaspé Co., Que.; at Ottawa, Belleville, Owen Sound and Lake Nipigon, Ont.; Lake Manitoba, Man.; Moose Mountain, Assiniboia; Castle Mountain, Devil's Lake, Badli and Hector, Rocky Mountains; near Edmonton, Athabasca; Revelstoke, Sprout, Cache Creek, and Hastings, B.C.; common on Vancouver Island at Victoria and Nanaimo. (*Macoun.*) Black River, Lake Winnipeg; Behring Island, Alta, and Cape Vancouver, Behring Sea, 1891. (*J. M. Macoun.*) Mountains south of Tuhmeen River, B.C.; alt. 5,000 feet. (*Dawson.*) Saskatchewan and Rocky Mountains. (*Bourgeau.*) Cascade Mountains. (*Loyall.*) Heigigalik (*Roth, Alaska.*) Greenland. (*Fl. Gr.*)

76. WEBERA, Hedw.

(428.) **W. acuminata**, Schimp.; Lesq. & James, *Mosses of N. America*, 216; Canadian Musci, No. 521.

On rocks at Bass River; and in Restigouche Co., N.B. (*Fowler's Cat.*) Quite common in crevices of rocks at the "Waterfall" at the base of Mount Sir Donald, opposite the Great Glacier, Selkirk Mountains. (*Macoun.*)

(429.) **W. polymorpha**, Schimp.; Lesq. & James, *Mosses of N. America*, 216.

W. cucullata, Canadian Musci, No. 468, in part.

Sitka. (*Bischoff.*) On earth, mountains north of Griffin Lake, Gold Range, B.C.; alt. 7,000 feet. (*Macoun.*) Greenland. (*Fl. Gr.*)

(430.) **W. elongata**, Schwagr.; Lesq. & James, *Mosses of N. America*, 216.

Crevices of rocks, St. John, N.B. (*Fowler's Cat.*)

(431.) **W. polymorphoides**, Kindb. (n. sp.)

Tufts large and dense, dull green above, rufoescent below, 4-5 cm. high. Stem finally denudate at the base, radiculose in the middle. Leaves crowded, not decurrent, ovate-oblong, acute or subobtuse, widely areolate, nearly entire and flat at the borders with the costa vanishing below the apex; the comal ones longer, sublinear-lanceolate short-acuminate with the upper cells narrow, the borders reflexed to the greater part; the costa thick and sub-percurrent. Capsule oblong,

short-necked, pendent; peristome pale-yellow, segments with a narrow basal membrane, cilia short and rudimentary; annulus narrow; lid mammillate; pedicel about 2 cm. long; spores brown, about 0.02 mm. Diœcious.

This species is allied to *Webera polymorpha*, but is very much larger, in habit resembling *Webera longicolla*.

Close to the glacier on the western face of Hermit Mountain, Roger's Pass, Selkirk Mountains, B.C.; alt. 7,500 feet. August 1st, 1890. (*J. M. Macoun.*)

(432.) **W. longicolla**, Hedw.; Lesq. & James, Mosses of N. America, 217.

Cascade Mountains. (*Lyall.*) Common in Greenland. (*Fl. Gr.*)

(433.) **W. nutans**, Hedw.; Lesq. & James, Mosses of N. America, 217; Canadian Musci, No. 160.

Bryum nutans, Drumm. Musc. Bor.-Am., No. 262.

Dry woods; about the roots of trees. (*Drummond.*) Pictou Co., N.S. (*McKay.*) On rotten wood, Bass River, N.B. (*Fowler's Cat.*) Moist, rotten wood, Tobique River, N.B. (*Hay.*) On rotten wood Canaan Forks, Queen's Co., and Tay, York, Co., N.B. (*J. Moser.*) Miquelon Island. (*Delàmare.*) River du Loup (*en bas.*) (*St. Cyr.*) On very rotten logs and bases of stumps across the continent. Subject to many varieties. Brackley Point, Prince Edward Island; Truro, N.S.; Beesie River and South West Point, Anticosti; in woods, Gaspé Co., Que.; in woods around Ottawa; at Prescott, Belleville, Owen Sound, and Lake Nepigon, Ont.; Manitoba House, and Swan Lake, Man.; at Morley, Devil's Lake, Banff and Hector, Rocky Mountains; Roger's Pass, Selkirk Mountains; Revelstoke, Sproat, Nelson, Sicamous, Griffin Lake, Donald and C  che Creek Mountain, B.C.; near Edmonton, Athabasca. (*Macoun.*) Vicinity of London, Ont. (*J. Dearness.*) Swamps at Black River and Dog Head, Lake Winnipeg; Fort Simpson, B.C.; and Ounalaska and St. Paul islands, Behring Sea, 1891. (*J. M. Macoun.*) Mountains east of Adam's Lake, B.C.; alt. 6,600 feet. (*Dawson.*) Vicinity of New Harbor, Chance Cove and Topsail, Newfoundland. (*Rev. A. Waghorne.*) Saskatchewan River. (*Bourgeau.*) Cascade and Galton Mountains, B.C. (*Lyall.*) Kotzebue Sound, Sitka and Iktigalik. (*Roth. Alask.*) Hare Island, West Coast of Greenland. (*John Sadler.*) Smith's Sound, between lat. 78  -82  . (*Dr. Hayes.*) Greenland. (*Fl. Gr.*)

Var. **macrospora**, Kindb. (n. var.)

Leaves denticulate to the middle; costa excurrent. Spores large, about 0.03 mm.

Summit of the Gold Range north of Griffin's Lake, B.C.; alt. 7,000 feet. August 9th, 1889. (Macoun.)

- (434.) **W. sphagnicola**, Schimp.; Lesq. & James, Mosses of N. America, 219.

In a peat bog at Kingston, N.S. (Macoun.) Disco, Greenland. (Fl. Gr.)

- (435.) **W. cucullata**, Schimp.; Lesq. & James, Mosses of N. America, 218; Canadian Musci, No. 468, in part.

Mountains north of Griffin Lake, Gold Range, B.C.; alt. 7,000 feet, 11th August, 1889. (Macoun.) Greenland. (Fl. Gr.)

- (436.) **W. canaliculata**, C. M. & Kindb. (n. sp.)

W. nutans var. *deflexa*, Kindb. (n. var.)

W. albicans var. *deflexa*, Bull. Torr. Bot. Club, XVII., 273.

Allied to *Webera nutans*. The median and comal leaves are longer-attenuate, denticulate sometimes below the middle, narrow-areolate, their costa is thick, canaliculate and excurrent; the comal ones revolute at the borders; only the lowest shorter and short-decurrent; the peristome is pale; lid low and flat.

On rocks, Vesuvius Bay, Salt Spring Island, Gulf of Georgia, B.C., May 10th, 1887. (Macoun.)

- (437.) **W. subcucullata**, C. M. & Kindb. (n. sp.)

W. gracilis, Canadian Musci, No. 424.

This species which has the habit of *Mielichhoferia nitida*, seems to be intermediate between *Webera cucullata* and *Webera pycno-decurrentis*. It resembles the last in the small compact tufts, the geniculate pedicel and the dioecious inflorescence, the small, (unripe) short-necked capsule, and the mammillate lid; but the stems are subjulaceous, and the dull green leaves are densely crowded and not decurrent; the lower leaves are short and subobtuse, nearly as in *Webera cucullata* but the areolation is narrower.

Crevices of rocks, Mount Queest, Gold Range, B.C.; alt. 6,500 feet. July 27th, 1889. (J. M. Macoun.) Among debris near perpetual snow on mountains north of Griffin Lake, Gold Range, B.C.; alt. 7,000 feet. August 8th, 1889. (Macoun.)

(438.) **W. pycno-decurrens**, C. M. & Kindb. (n. sp.)

Tufts dense, glossy bright green, 1-1.5 cm. high. Fertile stem 0.3-0.5 cm. high. Leaves small, acute, the lower ovate-oblong, crowded but short-decurrent, the comal very much longer, sublanceolate, revolute at the borders for the greater part, denticulate above, the inner perichetial leaves very much shorter, looser areolate; costa not excurrent. Capsule obovate, red-brown, distinctly short-necked, annulate, orange-margined at the mouth; cilia sometimes appendiculate, inner membrane broad, teeth finally dark yellow; lid convex, orange-margined, mammillate; pedicel geniculate at the middle; spores brown, small, about 0.01 mm. Diccious. This species resembles *Webera commutata* or rather *Webera Lescurii*, but seems to be quite distinct.

On earth amongst rocks, near perpetual snow on the Gold Range, north of Griffin Lake, B.C.; alt. 7,600 feet. August 10th, 1889. (*Macoun.*)

(439.) **W. microcaulon**, C. M. & Kindb. (n. sp.)

Resembling a small form of *Webera polymorpha* in the very short (about 3 mm. long) stem and the leaves acute, agglomerate in small buds. Differs principally in the diccious inflorescence and the very large spores, unripe about 0.03 mm. The capsules (not ripe) are short-obovate, annulate, with a short neck and a low mammillate lid, the pedicel straight, arcuate at the apex, 1-1.5 cm. long, the comal leaves scarcely revolute at the borders, the inner perichetial much shorter. The tufts are very compact; the leaves green or finally blackish.

On Digge's Island, Hudson Strait. August, 1884. (*R. Bell.*)

(440.) **W. micro-denticulata**, C. M. & Kindb. (n. sp.)

Tufts dense, glossy green, about 3 cm. high. Leaves small, loose when dry open-erect, decurrent, short, ovate-oblong, nearly entire, more widely areolate with a red and not percurrent costa, the comal ones longer, lanceolate, acute or sub-obtuse, narrow-areolate, revolute at the borders nearly all around, faintly denticulate above, costa pale and sub-percurrent. Capsules small (not ripe) obovate, short-necked; lid low mammillate. Diccious.

Probably allied to *Webera commutata*, Schimp., but differing principally in the distinct decurrent, loosely disposed leaves.

Close to perpetual snow on the Gold Range, north of Griffin Lake, B.C.; alt. 7,000 feet. August 7th, 1889. (*Macoun.*)

(441.) **W. micro-apiculata**, C. M. & Kindb. (n. sp.)

Tufts small, dense and shining, bright green above, decolorate below, about 2 cm. high. Leaves small; narrow-areolate, densely imbricate and appressed when dry; when moistened suberect, not decurrent, ovate-lanceolate with a needle-shaped, often incurved point, the lower nearly entire, the comal a little longer, faintly and distantly sinuolate-denticulate above, borders not revolute, costa not excurrent.

This species is very peculiar, but only found in a barren state. It resembles in habit a species of *Bryum* sect. *Anomobryum* also the pleurocarpous genus *Myurella*.

On damp rocks in Eagle Pass west of Revelstoke, B.C. May 23rd, 1890; also on wet rocks by the torrent at Hector, Rocky Mountains, August 13th, 1890. (*Macoun.*)

(442.) **W. Columbica**, Kindb. (n. sp.)

W. pulchella, Canadian Musci, No. 164.

Bryum carneum var. *pulchellum*, Drumm. Musc. Bor.-Am., No. 261, in part.

Differs from *W. pulchella* principally in the leaves being more denticulate at least in the middle, the red costa and the detached revolvable annulus of the capsule.

The leaves are slightly reflexed, not glossy; the capsule and the leaves are small, the segments furnished with 2 cilia.

Upon moist banks, not uncommon. (*Drummond.*) On earth in railway cuttings in Roger's Pass, Selkirk Mountains; both sides of the river at Revelstoke, along a brook at Yale, and at Hastings, Burrard Inlet, B.C.; also near Lesser Slave Lake, Athabasca; and along the Telegraph Trail near the Nechaceo River, B.C. (*Macoun.*)

(443.) **W. pulchella**, Schimp.; Lesq. & James, Mosses of N. America, 222.

Cascade Mountains of British Columbia. (*Mitten.*) On debris at Donald, Columbia Valley. (*Macoun.*)

(444.) **W. Lescuriana**, Lesq. & James, Mosses of N. America, 221; Canadian Musci, No. 163, in part.

On the ground, by roadsides, Bass River, N.B. [*Fowler's Cat.*] Wet places at Truro, N.S. (*Macoun, J. Moser.*)

(445.) **W. carnea**, Schimp.; Lesq. & James, Mosses of N. America, 221; Canadian Musci, No. 163, in part.

Wet springy places at Truro, N.S.; also by roadsides in wet soil at

Brackley Point and Black River, Prince Edward Island; on earth in Northern British Columbia. 1875. (*Macoun.*)

- (446.) **W. cruda**, Schimp.; Lesq. & James, Mosses of N. America, 218; Canadian Musci, No. 161.

Bryum elongatum, Drumm. Musc. Bor.-Am., No. 270.

B. lucidum, James, Plantæ Kaneanae.

Banks, amongst the Rocky Mountains. (*Drummond.*) Bass River, Kent Co., N.B. (*Fowler's Cat.*) Crevices of rocks, Canaan Forks, N.B. (*J. Moser.*) Crevices of rocks, rather common across the continent. Brackley Point and Pointe de Roche, P.E.I.; Pirate's Cove, N.S.; Madeline River, Gaspé Co., Que.; shores of lakes Superior, Nipissing, and Nepigon, Ont.; Pembina River, Athabasca; Peace River Cañon, lat. 56°; at Castle Mountain and Hector, Rocky Mountains; Roger's Pass, Selkirk Mountains; Revelstoke, and Pass Creek, Columbia River; Cache Creek Mountain and Lytton, Fraser River, B.C.; near Victoria and on Mount Benson, Vancouver Island. (*Macoun.*) Summit of Mount Queest, Gold Range, B.C.; Ounalaska Island, Behring Sea. 1891. (*J. M. Macoun.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Cascade Mountains, B.C. (*Lyll.*) Iktigalik. (*Roth. Alask.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) West Greenland and Smith's Sound. (*Dr. Kane.*)

- (447.) **W. Schimperl**, (C. Müell.) Schimp.; Fl. Greenland, 374.

B. rutilans, Bruch & Schimp.; Dr. Hayes, Exp.

Smith's Sound between lat. 78°—82°. (*Dr. Hayes.*) Clavering and Sabine Islands. (*Fl. Gr.*)

- (448.) **W. annotina**, Schwaegr.; Lesq. & James, Mosses of N. America, 219; Canadian Musci, No. 162.

Pictou Co., N.S. (*McKay.*) River du Loup (*en bas*), Que. (*St. Cyr.*) North Bay Lake Nipissing, Ont.; shore of Lake Winnipegosis, Man.; by springs along the Athabasca River, at Fort Assiniboine; near Asulean Creek, and along Beaver Creek, Selkirk Mountains; common around springs at Victoria, Vancouver Island. (*Macoun.*) Sabine Island and Disco. (*Fl. Gr.*)

- (449.) **W. Drummondii**, Lesq. & James, Mosses of N. America, 319.

B. carneum var. *pulchellum*, Drumm. Musc. Bor.-Am., No. 261, in part.

Bryum nutans var. *minor*, Drumm. Musc. Bor.-Am., No. 263.

Sitka. (*Harrington.*) Summit of the Rocky Mountains; in moist places (263); upon moist banks (261). (*Drummond.*)

- (450.) **W. commutata**, Schimp. ; Lesq. & James, Mosses of N. America, 220 ; Canadian Musci, No. 423.

Summit of Mount Albert, Gaspé Co., Que. ; alt. 4,000 feet ; wet gravel in Roger's Pass, and along Asulcan Creek, and at the Glacier on Hermit Mountain, Selkirk Mountains. (*Macoun.*)

- (451.) **W. Ludwigii**, Schimp., Synops. ed. 2.

Bryum Breidlerii, Canadian Musci, No. 425.

Webera Breidlerii, Jur.

Cascade Mountains, B.C. (*Lyall.*) Not uncommon in Greenland. (*Fl. Gr.*) Near the limit of perpetual snow ; on the summit of the Gold Range, north of Griffin Lake, B.C. ; alt. 7,000 feet. (*Macoun.*)

Var. **microphylla**, Kindb. (n. var.)

Differs principally in the very much smaller leaves. Barren.

On the summit of the Gold Range north of Griffin Lake, B.C. ; alt. 7,000 feet, August 7th, 1889. (*Macoun.*)

- (452.) **W. albicans**, Schimp. ; Lesq. & James, Mosses of N. America, 222 ; Canadian Musci, No. 165.

Bryum carneum, Drumm. Musc. Bor.-Am., No. 260.

Near springs amongst the Rocky Mountains. (*Drummond.*) Springy places, Windsor, N.S. (*Fowler's Cat.*) Wet earth at New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Pictou Co., N.S. (*McKay.*) River du Loup (*en bas*), Que. (*St. Cyr.*) Canaan Forks, Queen's Co., boggy places, York Co., N.B. (*J. Moser.*) On wet rocks at Trenton, and Heely Falls, Northumberland, Co., Ont. ; Sydenham Falls, Owen Sound, Ont. ; and around springs, Lake Nepigon ; abundant at Hector and Banff, Rocky Mountains ; quite common, Roger's Pass and along Asulcan Creek, Selkirk Mountains ; by springs at Revelstoke, Columbia River ; mountains at Griffin Lake, Gold Range ; and by the Fraser River above Yale, B.C. (*Macoun.*) In wet places at London, Ont. (*J. Dearness.*) Galton Mountains, B.C. (*Lyall.*) Jakobshavn, Greenland. (*R. Brown.*)

- (453.) **W. Tozeri**, Schimp. ; Lesq. & James, Mosses of N. America, 222 ; Canadian Musci, No. 188.

On clayey soil along Shawnagin Lake, and at Goldstream, Vancouver Island. 1887. (*Macoun.*)

77. BRYUM, Dill.

- (454.) **B. arcticum**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 224.

On the summit of Mount Albert, Gaspé Co., Que. ; House Mountain south of Lesser Slave Lake, N.W.T. (*Macoun*.) Melville Island. (*Parry*.) Rocky Mountains. (*Bourgeau*.) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes*.) Clavering Island, Upernivik. (*Fl. Gr.*)

- (455.) **B. erubescens**, Kindb. (n. sp.)

Stems short, scarcely 1 cm. high, loosely tufted. Leaves of the innovations green and small ; stem-leaves few, red-brown, not decurrent, ovate-lanceolate acuminate, red-margined, not revolute at the entire borders ; areolation pellucid, decolorate, upper cells narrow-rhomboidal or hexagonal ; costa red, more or less excurrent ; inner perichetial leaves smaller, immarginate, slightly sinuate above with a percurrent costa. Capsule small, regular, pendent, narrow-oblong, constricted below the mouth ; cilia appendiculate ; lid convex, mammillate ; pedicel thin, pale red, 2-3 cm. long. Spores extraordinarily large, about 0.03 mm. Diœcious.

This species having the habit of a *Webera* (*W. acuminata* or *W. polymorpha*), has no affinity to the other *Eubrya*, found in Canada. The small reddish leaves and the large spores distinguish it at once. It grows mixed with *Amblystegium porphyrrhizon*.

On the roots of a turned-up tree close to the discharge of Lake Louise, Rocky Mountains (No. 178). August 18th, 1891. (*Macoun*.)

- (456.) **B. hæmatophyllum**, Kindb. (n. sp.) ; Canadian Musci, No. 555.

Stems short, about 1 cm. high, loosely tufted or solitary. Leaves small, red, densely crowded, not decurrent, ovate or ovate-oblong, acute, indistinctly margined, reflexed at the entire borders ; areolation red, nearly uniform and loose ; costa very broad, not, or very short, excurrent ; perichetial leaves oblong-lanceolate. Capsule (not ripe) regular, pendent, obovate ; lid convex, short-apiculate ; pedicel thin, 1-2 cm. long. Spores small. Diœcious.

This species, probably belonging to the section *Eubryum*, is peculiar in the thick and broad costa of the red and short leaves.

On wet rocks in the "Dry Cañon" near the discharge of Devil's Lake, Rocky Mountains (No. 104). August 10th, 1890. (*Macoun*.)

No. 164, collected in the same locality seems to belong here, but the single unripe capsule has a mammillate lid.

- (457.) **B. purpurascens**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 224.

Melville Island. (*Parry*.) Rocky Mountains. (*Bourgeau*.) Rainy Lake, British America. (*Hubbard*.) Smith's Sound between lat. 78°—82°. (*Dr. Hayes*.) Common in Greenland. (*Fl. Gr.*) Labrador. (*Gremann* fide *Kindberg*.)

- (458.) **B. subpurpurascens**, Kindb. (n. sp.); Canadian Musci, No. 593.

Agreeing with *B. purpurascens* in the red tufts, the elongate shoots, the costa scarcely or faintly excurrent, the capsule long-necked, constricted below the mouth, teeth orange-colored segments free, cilia smooth, spores small, lid large, mammillate, pedicel red; differs in the inflorescence being dioecious, all leaves red-margined, long-excurrent, and principally in the curved subclavate capsule, resembling that of *Bryum meeseoides*.

On wet earth by the railway at Port Moody, Burrard Inlet, B.C., April 23rd, 1889. (*Macoun*.)

- (459.) **B. Brownii**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 224.

Melville Island. (*Parry*.) Rocky Mountains. (*Bourgeau*.) Franz Josephs Fjord, Greenland. (*Fl. Gr.*)

- (460.) **B. pendulum**, Schimp.; Lesq. & James, Mosses of N. America, 225; Canadian Musci, No. 167.

New Harbor, Newfoundland. (*Rev. A. Waghorne*.) On rotten wood, Bass River, Kent Co. and Carleton, N.B. (*Fowler's Cat.*) Cape Prince of Wales and Digge's Island, Hudson Strait. (*R. Bell*.) Crevices of rocks, Salt Lake, Anticosti; also at Campbellton, N.B.; on earth at Ottawa, and along the shore of Lake Huron; also at Swan Lake House, Man.; on rocks, Kananaskis Falls, Bow River Pass and Banff, Rocky Mountains; Stewart's Lake and Nechacco River, B.C. (*Macoun*.) Clearwater River, N.W.T.; and St. Paul Island, Behring Sea. (*J. M. Macoun*.) Upernivik, Greenland. (*Fl. Gr.*)

- (461.) **B. angustirete**, Kindb. Bull. Torr. Bot. Club, Vol. XVI. 94.

Differs from *B. pendulum* in the leaves being narrow, ovate-lanceolate, reflexed all around; upper areolation very narrow, sublinear, basal cells reddish; costa red. Capsule sub-cylindric; pedicel arcuate above; teeth paler; spores small, scarcely 0.02 mm. Synœcious.

On damp earth at the railway bridge over the Kananaskis, Rocky

Mountains; on wet rocks at the outlet of the Illeillewaet Canôn, near Revelstoke, B.C., May 18th, 1890. (*Macoun.*)

(462) **B. archangelicum**, Schimp.

On earth along the Ste. Anne des Monts River at the base of Mount Albert, Gaspé Co., Que., August 26th, 1882; on damp rocks at Hector, Rocky Mountains. (*Macoun.*) Sabine Island. (*Fl. Gr.*)

(463.) **B. inclinatum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 225; Canadian Musci, No. 381.

Miquelon Island. (*Delàmare.*) On damp, sandy soil, Brackley Point, Prince Edward Island and at Truro, N.S.; on earth along the Gaspé coast, Que.; on rocks near the "Gap," Bow River Pass and Banff, Rocky Mountains. (*Macoun.*) Mansfield Island, Hudson Strait. (*R. Bell.*) Kotzebue Sound. (*Roth. Alask.*) Kadiak Island, Alaska, and Ounalaska, Behring Sea. (*J. M. Macoun.*) Jakobshavn, Greenland. (*R. Brown.*)

(464.) **B. Froudei**, Kindb. Ott. Nat. Vol. V., p. 180.

Habit of *Webera nutans*. Agrees with *Bryum inclinatum* in the synœcious inflorescence and the symmetric capsule, &c., differs in the leaves being long-acuminate, cells long and narrow, the upper sublinear (nearly as in *Webera*), costa very long-excurrent, peristomial segments quite free from the teeth, spores smaller, scarcely 0.02 mm.; the cilia are wanting.

St. Paul Island, Behring Sea, July 30th, 1891. (*J. M. Macoun.*)

(465.) **B. Edwardsianum**, C. M. & Kindb. (n. sp.)

B. Warneum, Canadian Musci, No. 383.

Nearly allied to *Bryum Warneum*, agreeing in the peculiar peristome and the very large spores, about 0.05 mm., &c., but differing principally in the leaves being longer acuminate, entire, revolute at the borders, the costa long-excurrent, the capsule narrower and the lid lower; flagelliform branches absent. Monœcious.

On damp, sandy soil close to the sands of Brackley Beach, Prince Edward Island, July 7th, 1888. (*Macoun.*)

(466.) **B. brachyneuron**, Kindb. Ott. Nat. Vol. V., p. 180.

Agrees with *Bryum pendulum* in the synœcious inflorescence, the peristomes orange, the segments adhering to the teeth, the apiculate

lid and large spores (about 0.04 mm.); differs in the leaves being decurrent, short-ovate, the costa broad, abbreviate, not excurrent, the shoots bearing globose buds (gemmae), the very much broader peristomial teeth. Stem red, very short; the pedicel about 1 cm. long or shorter, often scarcely emerging above the tufts; costa of the lowest leaves red, percurrent only in the leaves of the shoots and the perichetial ones; capsule ventricose, short-necked, constricted below the mouth.

Bryum fallax, Milde, resembling it in habit, is dioecious; the segments are free, the spores smaller. *Bryum lacustre* differs in the not decurrent leaves, the capsule not constricted below the mouth, the pedicel is longer and the peristome is pale, &c.

St. Paul Island, Behring Sea. 1891. (*J. M. Macoun.*)

(467.) **B. fallax**, Milde, Bryol. Siles.

St. Matthew Island, Behring Sea, August 10th, 1891. (*J. M. Macoun.*)

(468.) **B. lacustre**, Brid. ; Lesq. & James, Mosses of N. America, 226.

Peninsula of Shumagin, Alaska. (*Harrington.*) Kotzebue Island. (*Roth. Alask.*) Greenland. (*Fl. Gr.*)

(469.) **B. flexuosum**, Aust. ; Lesq. & James, Mosses of N. America, 227.

Wet gravelly ground along the Blackwater River ; also at Quesnel on the Fraser River, and at Stewart's Lake, B.C. (*Macoun.*)

(470.) **B. calophyllum**, R. Brown ; Lesq. & James, Mosses of N. America, 227.

Melville Island. (*Parry.*) Greenland. (*Fl. Gr.*)

(471.) **B. æneum**, Blytt, Bryol. Europ. ; Greenland Flora, 367.

Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) Clavering and Sabine Island. (*Fl. Gr.*)

(472.) **B. uliginosum**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 227 ; Canadian Musci, No. 168.

Wet places, Gunn River, Anticosti ; Sugar Loaf Mountain, Campbellton, N.B. ; wet rocks, Gaspé Coast, Que. ; and along the shores of Lake Superior and westward to Rainy Lake ; House Mountain, near Lesser Slave Lake ; on earth along the Blackwater River, B.C.

(Macoun.) On wet rocks, River du Loup (*en bas*), Que. (*St. Cyr.*) Tay, York Co., N.B. (*J. Moser.*)

(473.) **B. Labradorensis**, Philib. revue-byrol. 1889, p. 61.

Allied to *Bryum inclinatum*; also found in Norway. Labrador, (*Gremann fide Philibert.*)

(474.) **B. intermedium**, Brid.; Lesq. & James, Mosses of N. America, 228; Canadian Musci, No. 169.

B. occidentale, Canadian Musci, No. 390.

Grand Falls of Nipisiquit, N.B. (*Fowler's Cat.*) Crevices of rocks, chiefly limestone, across the continent. At Truro, N.S.; Brackley Point, Prince Edward Island; along the Moira River at Belleville. Ont.; along Lake Nepigon and Lake Superior; also at Lake Winnipegosis, Man.; on the Pembina River, west of Edmonton, Athabasca; Cypress Hills, Alberta; wet rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains; Blackwater River and Spence's Bridge, B.C.; quite common at Comox and Victoria, Vancouver Island. (*Macoun.*) In woods at Kingston, Ont. (*Prof. Fowler.*) On Mansfield Island, Hudson Strait. (*R. Bell.*) In rocky places at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) At New Harbor, Pickle Harbor and Norman Cove, Newfoundland. (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*)

* **B. mamilligerum**, Kindb. (n. sub-sp.)

Differs from *Bryum intermedium* in the leaves being distinctly margined, nearly flat on the borders; capsule oblique, distinctly constricted below the mouth, often horizontally patent; lid mammillate, not apiculate; spores larger, about 0.025 mm.; stem very short, 1-2 mm.

On damp rocks in the "Dry Cañon," near the discharge of Devil's Lake, Rocky Mountains, August 10th, 1891. (*Macoun.*)

(475.) **B. cirrhatum**, Hoppe & Hornsch.; Lesq. & James, Mosses of N. America, 228.

On rocks along the Gaspé Coast, Que. (*Macoun.*) Crevices of rocks near the summit of Mount Queest, B.C. (*J. M. Macoun.*) Miquelon Island. (*Delamare.*) Newfoundland (?) (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*)

Var. **megalosporum**, Kindb. (n. var.)

Differs principally in the large spores, about 0.03 mm.

On wet soil on rocks, North Arm, Burrard Inlet, B.C., April 29th, 1889. (*Macoun.*)

- (476.) **B. nitidulum**, Lindb. ; Fl. Greenland, 367.

Upervik, Jakobshavn, Greenland. (*Fl. Gr.*)

- (477.) **B. bimum**, Schreb. ; Lesq. & James, Mosses of N. America, 229 ; Canadian Musci, No. 170.

B. turbinatum, Drumm. Musc. Bor.-Am., No. 266.

Common in marshes ; and upon moist banks. (*Drummond.*) St. John and New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Borders of swamps, Bass River and St. John, N.B. (*Fowler's Cat.*) In Halifax and Pictou counties, N.S. (*McKay.*) Wet woods at Canaan Forks, and boggy places at Elmwood, York Co., N.B. (*J. Moser.*) Common near London, Ont. (*J. Dearness.*) Quite common in marshy spots in woods across the continent. Swamps, Straits of Canso, N.S. ; in woods, Gaspé coast, Que. ; common at Ottawa and Belleville, Ont. ; also in swamps, North Bay, Lake Nipissing, and at Nipigon, Lake Superior ; on earth, Manitoba House, Man. ; also at McLeod's Lake and Agassiz, B.C. ; common at Victoria, Vancouver Island. (*Macoun.*) Saskatchewan and Rocky Mountains. (*Bourgeau.*) Galton Mountains, B.C. (*Lyall.*) Franz Joseph Fjord. (*Fl. Gr.*)

Var. **angustifolium**, Kindb. (n. var.)

Leaves narrow, loosely disposed ; pedicel shortly emerging above the innovations ; stem 5 cm. high.

On wet rocks at Cape Vincent, near Kingston, Ont., June 1st, 1881. (*Prof. James Fowler.*)

- (478.) **B. microstegium**, Bryol. Europ. ; Fl. Greenland, 368.

Godhavn and Holstenberg, Greenland. (*Fl. Gr.*)

- (479.) **B. leucolomatum**, C. M. & Kindb. (n. sp.) ; Canadian Musci, No. 543.

Nearly allied to *Bryum bimum* ; differs principally in the stem being more robust and elevate, above 8 cm. high, the leaves pale-bordered, the inner perichetial ones cuspidate. The capsules are not ripe, the lid is whitish, apiculate, the pedicel 3-4 cm. long, the inflorescence syncocious.

In a small marsh on the slope of the mountain at Revelstoke, B.C., May 17th, 1890. (*Macoun.*)

- (480.) **B. pallescens**, Schleich. ; Lesq. & James, Mosses of N. America, 231 ; Canadian Musci, No. 172.

Miquelon Island. (*Delàmare.*) Newfoundland (?) (*Rev. A. Wag-*

horne.) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On earth, near Belleville, Hastings Co., and at Lake Nepigon, Ont.; and at Banff and Hector, Rocky Mountains; on damp rocks at Deer Park, Lower Arrow Lake, Columbia River, near McLeod's Lake, lat. 55°. and Sicamous, B.C. (*Macoun.*) Cascade Mountains. (*Lyall.*) Greenland. (*Fl. Gr.*)

Var. **laxifolium**, Kindb., Bull. Torr. Bot. Club, XVII., 274.

Leaves loose, not glossy, long and narrow; upper cells narrow; spores small, about 0.01 mm.

Kananaskis Pass, Rocky Mountains, in damp woods, June 23rd, 1885. (*Macoun.*)

Var. **longifolium**, Kindb., Bull. Torr. Bot. Club, XVII. 274.

Leaves dense, glossy, very long-attenuate; upper cells narrow; spores small.

Wet gravelly soil at Morley, Rocky Mountains, June 13th, 1885. (*Macoun.*)

(481.) **B. teres**, Lindb.; Fl. Greenland, 369.

Franz Joseph Fjord and Sabine Island. (*Fl. Gr.*)

(482.) **B. subrotundum**, Brid.; Lesq. & James, Mosses of N. America, 231; Canadian Musci, No. 458.

Mountains of Canada. (*Drummond.*) On dry earth by a brook at Lytton, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*)

(483.) **B. Knowltoni**, Barnes, Coult. Bot. Gaz. XVI., 44.

Crevices in rocks, Funk Island, Newfoundland, August, 1887. (*F. H. Knowlton.*)

(484.) **B. micro-erythrocarpum**, C. M. & Kindb. (n. sp.)

B. murale, Canadian Musci, No. 186.

Nearly allied to *B. erythrocarpum*; differs in the shorter stem; the leaves distinctly yellow-margined, laxer areolate, the costa sometimes excurrent, the capsule more ventricose, constricted below the mouth, the lid longer-apiculate.

In wet gravel, shore of Shawnigan Lake, Vancouver Island, July 1st, 1887. (*Macoun.*)

- (485.) **B. atropurpureum**, Wahl. ; Lesq. & James, Mosses of N. America, 232.

On earth at Foster's Flats below Niagara Falls, Ont. (*Macoun.*)

- (486.) **B. Blindii**, Bruch & Schimp. ; Canadian Musci, No. 502.

On damp earth in railway ditches a little east of Hector, Rocky Mountains ; also on debris at the mouth of Six-Mile Creek, Selkirk Mountains, B.C. (*Macoun.*)

- (487.) **B. alpinum**, Linn. ; Lesq. & James, Mosses of N. America, 233.

On wet earth at Port Moody, Burrard Inlet, B.C., April 24th, 1889. (*Macoun.*)

- (488.) **B. Rauli**, Aust., in Coult. Bot. Gaz. II., 110 ; Canadian Musci, No. 480.

B. Muchlenbeckii, Lesq. & James, Mosses of N. America, 233 (Belleville specimen) ; Canadian Musci, No. 174.

Boggy places, Truro, N.S. ; on rocks, Gull Lake, Addington Co. ; and along the Moira at Belleville, Hastings Co., Ont. ; on rocks, Lake Nepigon ; on rocks at Spray Falls, Banff, Rocky Mountains ; on wet rocks, Eagle Pass, west of Revelstoke, and at Agassiz, B.C. (*Macoun.*)

- (489.) **B. Muehlenbeckii**, Bruch & Schimp ; Bryol. Europ. ; Fl. Greenland, 369.

Proven, Greenland. (*Dr. Kane.*) Topsail Harbor, Newfoundland (*Rev. A. Waghorne.*)

- (490.) **B. hæmatocarpum**, C. M. & Kindb. (n. sp.) ; Canadian Musci, No. 555.

Tufts very tomentose below the green innovations, about 5 cm. high. Leaves loosely appressed, when dry slightly corrugate but not twisted, crowded, not decurrent, subovate, acute, pellucid, narrow-marginate and revolute at the entire borders all around, those of the innovations less distinctly revolute and marginate to above the middle ; cells pale yellow, the upper short-rhomboidal ; costa yellow, percurrent or in the upper-most leaves slightly excurrent. Capsule large (as in *Bryum pallescens*), suboblong-cylindric, blood-red, doubly longer than the pale collum, pendent or patent, not appressed to the pedicel ; peristome dark-yellow or orange below, pale above ; segments free and very much shorter than the membrane ; cilia faintly appendiculate or

rather nodose; annulus broad; lid nearly flat and apiculate; pedicel red, flexuous, about 2.5 cm. long; spores small, about 0.018 mm. Diœcious.

This remarkable species is a true *Eubryum*, although the peristomial cilia are not distinctly, or only at the base, appendiculate. It resembles *Bryum alpinum* in the color of the capsule, but is very different in the shorter, margined leaves and their wider areolation, the tomentose tufts, &c.

On damp rocks on the mountain between Pass Creek and the Columbia River above Sproat, June 19th, 1890. (*Macoun.*)

(491.) **B. pygmaeo-alpinum**, C. & M. Kindb. (n. sp.)

Tufts dense and small, about 1 or 1.5 cm. high. Stem sparingly radiculose to the buds. Leaves small, olive-green or finally reddish, flaccid, not glossy, laxly areolate, hyaline; the uppermost close, the other loosely disposed, not decurrent, very much smaller, all subovate or oval obtuse, the uppermost sometimes subacute; borders not margined nor revolute; upper cells short-rhomboidal; costa broad, purplish, percurrent or in the uppermost leaves slightly excurrent. Barren.

This species is probably allied to *Bryum calophyllum* or to *Bryum obtusifolium*, Lindb. On wet rocks, summit of Mount Arrowsmith, Vancouver Island, alt. 5,700 feet, July 17th, 1887. (*Macoun.*)

(492.) **B. percurrentinerve**, Kindb.

B. percurrentinerve, Kindb., Bull. Torr. Bot. Club. XVII., 274; Canadian Musci, No. 505.

Tufts compact, dull green above, decolorate below, about 2 cm. high. Leaves, when dry, appressed and corrugate, when moistened sub-patent, crowded and slightly decurrent, ovate obtusate (only the uppermost ovate-oblong and subacute), narrow-margined and revolute at the entire borders to the greater part; areolation pellucid, upper cells wide, sub-rhomboidal; costa red and percurrent, in the uppermost leaves pale.

Allied to *Bryum Muehlenbeckii*, but differing principally in the color of the plant, the leaves thinner, broader and shorter, at the apex patent or sometimes reflexed, not cucullate.

On dripping rocks on the face of a small waterfall in a brook just west of the ferry at Kamloops, B.C., June 18th, 1889. (*Macoun.*)

(493.) **B. miniatum**, Lesq.; Lesq. & James, Mosses of N. America, 233.

On wet rocks on Sproat Mountain, Columbia River, B.C. (*Macoun.*)

(494.) **B. capitellatum**, C. M. & Kindb. (n. sp.)

B. minutum, Canadian Musci, No. 175, in part.

Tufts small compact, yellowish green above, reddish-rufescent below. Stems (primary branches) subjulaceous, clavate, acute, radiculose at the base, about 1 cm. high; innovations short. Leaves gradually larger upwards, not decurrent, very concave, not margined nor revolute at the entire borders; areolation wide and pellucid, upper cells sub-rhomboidal, the lower sub-rectangular; the lowest leaves very small, short-elliptic and blunt, loosely disposed, the other crowded, the median suboval and blunt, the uppermost ovate-oblong, subacute; costa finally red, percurrent in the upper leaves, abbreviate in the lower. Barren.

Probably allied to *Bryum Atwateriæ* and *B. minutum*, which both differ in the leaf-cells being narrower and yellow, the leaves obtuse and cucullate at the apex, faintly revolute at the borders below the middle; the last has smaller leaves and shorter marginal cells.

Borders of ditches at Comox, Vancouver Island, April 30th, 1887. (Macoun.)

(495.) **B. Atwateriæ**, C. Muell.; Lesq. & James, Mosses of N. America, 234; Canadian Musci, No. 176.

B. Macounii, Aust. in Coult. Bot. Gaz. II. 110.

On wet rocks along Gull Lake, Addington Co., Ont.; abundant on wet rocks, Sproat Mountain, Columbia River; wet rocks, North Arm, Burrard Inlet, B.C.; Mount Erskine, Salt Spring Island, Gulf of Georgia; abundant on wet rocks near Victoria and at Comox, Vancouver Island; also on wet rocks along Stewart's River, northern British Columbia. (Macoun.)

(496.) **B. argenteum**, Linn.; Lesq. & James, Mosses of N. America, 234; Canadian Musci, No. 177; Drumm. Musc. Bor.-Am., No. 251.

Common in various situations. (Drummond.) On earth or stones, Truro, N.S. (Fowler's Cat.) Common on earth by roadsides and paths, and on bare rocks, chiefly the var. *lanatum*. Quite common in Ontario and westward. On earth, Manitoba House, Lake Manitoba, Man.; also at Edmonton, Athabasca; and McLeod's Lake, lat. 55°; and at Cache Creek, B.C. (Macoun.) Very common on sandy soil at London, Ont. (J. Dearness.) New Harbor and Chance Cove, Newfoundland. (Rev. A. Waghorne.) Rocky Mountains, (Bourgeau.) Disco Island, Greenland. (Fl. Gr.) Iktigalik, Alaska. (Roth. Alask.) St. Paul Island, Behring Sea. 1891. (J. M. Macoun.)

Var. **lanatum**, Bruch & Schimp.

Common on earth at Ottawa, Belleville and Owen Sound, Ont.; Cove Head, Prince Edward Island; on rocks at Morley, Rocky Mountains; and at Revelstoke and Deer Park on the Columbia River, B.C. (*Macoun.*) On sandy knolls at London, Ont. (*J. Dearness.*)

(497.) **B. caespitium**, Linn.; Lesq. & James, Mosses of N. America, 235; Canadian Musci, No. 178.

Chance Cove, Newfoundland; Fox Harbor and Vesuvius Pickle, Labrador. (*Rev. A. Wagborne.*) On dry ground, Bass River, N.B. (*Fowler's Cat.*) On earth, Queen's Co., N.B. (*J. Moser.*) Halifax and Pictou counties, N.S. (*McKay.*) River du Loup (*en bas*), Que. (*St. Cyr.*) Common on earth in open places in woods and in pastures across the continent. Brackley Point and Cove Head, Prince Edward Island; at Ste. Anne des Monts, Gaspé Co., Que.; abundant at Ottawa and Belleville, Ont.; amongst rocks at Lake Nepigon; in pastures, where water has stood, at Morley and Banff, Rocky Mountains; in Roger's Pass, Selkirk Mountains; also at Revelstoke, Deer Park, Cache Creek, Spence's Bridge and Lytton, B.C.; north of Edmonton, Athabasca. (*Macoun.*) On logs at Lobourough Lake, near Kingston, Ont. (*Prof. Fowler.*) Little Whale River, Hudson Bay. (*G. Barnston.*) Clearwater River, N.W.T., lat. 57°. (*J. M. Macoun.*) Jakobshavn, Greenland. (*B. Brown.*) Big Duck Island, Baffins' Bay. (*J. Sadler.*)

(498.) **B. synolco-caespitium**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 513.

Tufts dense, about 1 cm. high, radiculose only at the base, green above, brown-decolorate below. Leaves erect, not decurrent, subovate, acuminate, not margined, recurved at the borders, slightly denticulate above; costa long-excurrent, very rigid, thick and often denticulate, light-brown. Capsule turgid, oval, very short-necked, not, or slightly, constricted below the mouth, pendent; peristome perfect; lid low and umbonate; spores about 0.015 mm.; pedicel geniculate below the middle, arcuate at the apex, about 5 cm. long, thick and red. Synœcious.

This species is very different from the allied *Bryum caespitium* in the synœcious inflorescence, the larger spores and the long, geniculate pedicel of the capsule.

On earth amongst gravel in the old channels of the Illecillewaet River below the Cañon at Revelstoke, B.C., May 27th, 1890. (*Macoun.*)

- (499.) **B. Vancouveriense**, Kindb., Bull. Torr. Bot. Club, XVI., 95; Canadian Musci, No. 457.

Differs from *B. caespiticium* in the leaves being longer acuminate, at the base red, and reflexed only below the middle; cells small, upper very narrow; costa very thick, excurrent in most of the leaves; capsule not pendent and not constricted below the mouth, lid deplanate; spores larger, about 0.015 mm.; stem indistinct with gemmiform innovations; pedicel very long, 4-5 cm.

On wet slopes of Mount Finlayson at Goldstream, Vancouver Island, June 28th, 1887. (*Macoun.*)

- (500.) **B. microglobum**, C. M. & Kindb. (n. sp.)

Tufts compact, green, radiculose below, small and about 1 cm. high; branches very short, bearing small buds. Leaves narrow-margined, subentire: stem-leaves ovate-oblong and short-acuminate, faintly revolute at the borders, branch-leaves ovate-acute and not revolute; upper cells short except the narrow marginal ones; costa more or less short-excurrent. Capsule small, inclined, pale, globose-pyriform small-mouthed; peristome perfect; teeth pale; cilia short but appendiculate; lid convex with a conical mammilla; pedicel arcuate at apex, about 3 cm. long. Diocious.

This species has the habit of *Bryum Warneum*, also in the shape of the capsule, but it is a true *Eubryum* with appendiculate cilia.

On earth, near London, Ont. 1889. (*J. Dearness.*)

- (501.) **B. oligochloron**, C. M. & Kindb. (n. sp., ad interim); Canadian Musci, No. 554.

This species is still doubtful, being only found in a barren state. It is peculiar in the upper leaf-cells being very narrow (as in the section *Anobryum*), the leaves are ovate-lanceolate, long-acuminate, nearly hyaline and the costa long-excurrent.

On rocks at Deer Park, Lower Arrow Lake, Columbia River, B.C., June 12th, 1890. (*Macoun.*)

- (502.) **B. rubicundulum**, C. M. & Kindb. (n. sp.); Canadian Musci. No. 519.

Tufts compact, olive green, very radiculose to the innovations. Stems about 2-3 cm. high. Leaves appressed when dry, concave, obtuse, the lower oblong, the upper ovate, forming small buds, chlorophyllose and not yellow nor hyaline, rarely reddish; borders revolute and narrow-marginate nearly all around; upper cells wide;

costa red, subpercurrent; perichetial leaves narrower, sub-acute and narrow-areolate. Capsule inclined, obovate-oblong, short-necked, constricted below the mouth when dry, purplish-brown; peristome pale yellow; inner membrane low; cilia short, nodulose or appendiculate; spores small, about 0.016 mm.; lid conical, short-apiculate; pedicel geniculate at the base. Dioecious.

This species is nearly allied to *B. miniatum* but the stems are more radiculose and very much less foliate, the leaves rarely purplish, and their areolation wider. The capsule of neither species is larger than in *Bryum caespiticium*, smaller than in *Bryum Atwateriae*. The leaves in *Bryum percurrentinerve* are larger and bright green.

On the summit of Hermit Mountain close to the glacier on the west side, Roger's Pass, Selkirk Mountains, B.C., August 5th, 1890. (*J. M. Macoun.*)

(503.) **B. anæctangiaecum**, C.M. & Kindb. (n. sp.)

Tufts compact, radiculose, small, scarcely 2 cm. high. Leaves small, rose-colored, loosely disposed, and the stem spirally contorted in a dry state, ovate-acute, pellucid, narrow-ovate, entire, faintly revolute, laxly areolate; costa thick, reddish, percurrent or short-excurrent. Probably monoecious, but the male flowers not well developed.

This peculiar species is perhaps nearly allied to *Bryum erythrophyllum*. On rocks by the torrent at Hector, Rocky Mountains, B.C., August 12th, 1890. (*Macoun.*)

(504.) **B. capillare**, Linn.; Lesq. & James, Mosses of N. America, 235; Canadian Musci, No. 179.

Pictou Co., N.S. (*McKay.*) On rich earth on rocks, Gilmour's Park, Chelsea, Que.; on roots of trees in woods at Belleville, and in McKay's Woods, Ottawa, Ont.; on rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains; on rocks at Sicamous, Agassiz and Hastings, B.C.; Salt Spring Island, Gulf of Georgia, B.C. (*Macoun.*) Near London, Ont. (*J. Dearness.*) Sitka. (*Roth. Alask.*) Greenland. (*Fl. Gr.*)

* **B. heteroneuron**, C. M. & Kindb. (n. subsp.)

B. Domianum, Bull. Torr. Bot. Club, XVII., 273.

B. obconicum, Bull. Torr. Bot. Club, XVII., 274; Canadian Musci, No. 181.

B. provinciale, Canadian Musci, No. 171.

Differs in the leaves being finally purplish-colored, less contorted when dry, distinctly serrate above, finally red-margined, the costa

dark-purplish, either long-excurrent, with the point thick and very rigid, or vanishing below the apex. Dioecious.

It agrees also with *Bryum Donianum*, Grev., in the clavate branches and the smaller spores, about 0.01 mm., but the leaf-borders are not incrassate, the capsule is not so large. On earth in McKay's bush, near Ottawa, Ont., (1888); on earth at Hastings, Burrard Inlet, B.C. (1889); on rocks at Esquimalt, Victoria and Nanaimo, Vancouver Island; also on Mount Erskine, Vesuvius Bay, Salt Spring Island, Gulf of Georgia (1887). (*Macoun.*)

Var. **brevicuspidatum**, Kindb. (n. var.) Canadian Musci, No. 180.

Leaves short-pointed.

Bases of stumps near Victoria (1875) and at Cedar Hill (1887), Vancouver Island. (*Macoun.*)

(505.) **B. elegans**, Esenb.

On earth along the Ste. Anne des Monts River, Gaspé Co., Que., August, 1882. (*Macoun.*)

(506.) **B. cyclophyllum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 237; Canadian Musci, No. 538.

On stones wet with spray, Niagara Falls. (*Clinton.*) On stones at Spray Falls, Banff, Rocky Mountains. (*Macoun.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) Godhavn, Greenland. (*Fl. Gr.*)

(507.) **B. obtusifolium**, Lindb.; Fl. Greenland, 370.

Godhavn, and other localities in Greenland. (*Fl. Gr.*)

(508.) **B. erythrophyllum**, Kindb. (n. sp.)

Closely allied to the arctic *Bryum obtusifolium*, Lindb. Barren stems laxly cohering, blood-red, about 1 cm. high. Leaves small, reddish, loosely disposed, flaccid, not decurrent, the lower ovate, subobtusate, the upper leaves sometimes more attenuate, furnished with a rigid point to the excurrent costa, entire, subimmarginate, not reflexed at the margins; areolations lax, nearly uniform; costa red, percurrent or slightly excurrent in a short recurved point.

In boggy places by a brook at Truro, N.S., June 12th, 1883; on wet earth in the Illecillewaet Cañon, near Revelstoke, B.C., May 18th, 1890. (*Macoun.*)

- (509.) **B. pallens**, Swartz ; Lesq. & James, Mosses of N. America, 237.

Magdalen Islands. (*McKay.*) On earth and rocks, Gaspé coast, Que. ; along Nepigon River, Ont. ; on earth at Cliche Creek, and Quesnel, B.C. ; and in wet places at Victoria, Vancouver Island ; Beaver Creek, Selkirk Mountains, B.C. (*Macoun.*) Jakobshavn, Greenland. (*R. Brown.*)

- (510.) **B. Duvallii**, Voit. ; Lesq. & James, Mosses of N. America, 238 ; Canadian Musci, No. 182.

Miquelon Island. (*Delamare.*) Water courses on the side of Mount Albert, Gaspé Co., Que. (*J. A. Allen.*) Around springs at Truro, N.S. ; wet rocks, in ditches, around Ottawa ; also along the Moira at Belleville ; and in boggy places at Lake Nepigon ; boggy places, shore of Lesser Slave Lake, Athabasca ; at Kicking Horse Lake and Banff, Rocky Mountains ; and around springs, Selkirk Mountains, B.C. (*Macoun.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*)

Var. **lato-decurrens**, C. M. & Kindb. (n. var.)

Bryum lato-decurrens, Canadian Musci, No. 487.

Differs in the leaves, also in the upper, being looser disposed, longer-decurrent, the uppermost distincter apiculate with a sometimes excurrent costa, the lower short and broad, the stem more radiculose.

On wet earth in Roger's Pass, Selkirk Mountains ; in marshes and ditches at Revelstoke, on both sides of the Columbia River, May 5th, 1890. (*Macoun.*)

- (511.) **B. pseudotriquetrum**, Schwaegr. ; Lesq. & James, Mosses of N. America, 238 ; Canadian Musci, 183.

Hopewell Bay, and Bay Bull Arm, Newfoundland. (*Rev. A. Waghorne.*) Miquelon Island. (*Delamare.*) Wet rocks, Bass River, N.B. (*Fowler's Cat.*) On earth at Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser.*) Wet ground, Jupiter and Gunn rivers, Anticosti ; damp woods at Campbellton, N.B. ; damp woods near Ottawa ; Sydenham Falls, near Owen Sound, Ont. ; in bogs, at Morley, very abundant at Banff and at Hector, Rocky Mountains ; mountains north of Griffin Lake, Gold Range ; also at Quesnel and Yale on the Fraser River, B.C. ; at Comox and Victoria, Vancouver Island. (*Macoun.*) Crevices of wet rocks, Black River, Lake Winnipeg. (*J. M. Macoun.*) Common and variable in Greenland. (*Fl. Gr.*) On wet earth at Cape Vincent, near Kingston, Ont. (*Prof. Fowler.*)

Var. **hyalodontium**, C. M. & Kindb. (n. var.)

Differs principally in the pale-brown capsule and the pale, hyaline, peristome.

On wet rocks at Hector, Rocky Mountains, B.C., August 13th, 1890. (*Macoun.*)

(512.) **B. denticulatum**, Kindb., Bull. Torr. Bot. Club, XVII., 273.

Differs from *B. pseudotriquetrum* in the leaves being distantly denticulate to the middle, lanceolate-acuminate, reflexed at the base. Barren.

Around springs, on the Cypress Hills, Alberta (1880); in a bog in Roger's Pass, Selkirk Mountains, B.C., August 21st, 1885. (*Macoun.*)

(513.) **B. hydrophilum**, Kindb., Bull. Torr. Bot. Club, XVI., 95.

Closely allied to *B. pseudotriquetrum*, but the leaves are narrower, ovate-lanceolate, reflexed at the base or not at all; costa yellow; tufts loose, radiculose only below. Flowers and capsules not found.

Wet springy places near the sea at Nanaimo, Vancouver Island, June 4th, 1887. (*Macoun.*)

(514.) **B. turbinatum**, Schwaegr.; Lesq. & James, Mosses of N. America, 238.

On rocks, St. Anne des Monts River, Gaspé Co., Que.; on calcareous rocks at Belleville, Ont.; also along the Athabasca River at Fort Assiniboine, N.W.T.; Blackwater River and Hastings, B.C.; on earth at Comox, Vancouver Island. (*Macoun.*) Galton Mountains, B.C. (*Lyall.*) Greenland. (*Fl. Gr.*)

(515.) **B. meseoides**, Kindb., Bull. Torr. Bot. Club, XVI., 95; Canadian Musci, No. 187.

Diœcious. Densely cæspitose. Stem 1-2 cm. high, reddish. Leaves yellowish, brown-margined, not decurrent, ovate-oblong or short-lanceolate, short-acuminate, faintly denticulate at the apex, slightly reflexed on the borders at the base, cells rhomboidal-oblong; costa red, scarcely excurrent, abbreviated in the lower leaves; male flowers discoid; perigonal leaves ovate-lanceolate, narrower areolate, denticulate from the middle; perichetial leaves narrow, more acuminate. Capsule narrowly pyriform, defluent to a longer collum, immature, arcuate, pale, wide-mouthed, constricted below the mouth; lid convex, pale-yellow, mammillate; teeth pale-yellow, connivent; annulus double;

cilia perfect, long and appendiculate; basilar membrane very low or indistinct; pedicel 2-3 cm. long; spores very small, 0.01 mm.

Differs from *B. turbinatum* in the leaves being narrower, brown-margined and not decurrent; cells smaller; perigonal leaves denticulate; capsule arcuate and long-necked; spores smaller.

Wet rocks, Gaspé coast, Que.; along Cave Avenue at Banff, Rocky Mountains; along the railway in Roger's Pass, Selkirk Mountains; abundant in wet places at Victoria and Nanaimo, Vancouver Island. (*Macoun.*)

(516.) **B. microcephalum**, C. M. & Kindb. (n. sp. ad interim.)

This is a doubtful species, not having been found with capsules. It somewhat resembles *Bryum caespitium*, the stem is proliferous with small male buds, the leaves are contorted, the costa is percurrent or short-excurrent, the inflorescence dioecious.

On rocks at Deer Park, Lower Arrow Lake, Columbia River, B.C., June 11th, 1890. (*Macoun.*)

(517.) **B. torquescens**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 230.

Wet places at Truro, N.S.; also on Mount Albert, Gaspé Co., Que. (*Macoun.*) Determination very doubtful; may be a new variety. (*Kindberg.*)

(518.) **B. Schleicheri**, Schwaegr.; Lesq. & James, Mosses of N. America, 239; Canadian Musci, No. 516; Drumm. Musc. Bor.-Am., No. 264.

In a marshy spot, near the "Height of Land," Rocky Mountains. (*Drummond.*) In a wet springy place at the base of Avalanche Mountain, Roger's Pass, Selkirk Mountains, B.C.; on Mount Aylmer, near Devil's Lake, Rocky Mountains, alt. 8,000 feet. (*Macoun.*) Greenland. (*Fl. Gr.*)

(519.) **B. roseum**, Schreb.; Lesq. & James, Mosses of N. America, 239; Drumm. Musc. Bor.-Am., No. 255.

Shady woods, Kent Co., N.B. (*Fowler's Cat.*) About the roots of trees in Upper Canada (Ontario). (*Drummond.*) Very likely the next species.

- (520.) **B. Ontariense**, Kindb., Bull. Torr. Bot. Club, XVI., 96 ; Canadian Musci, No. 184.

Intermediate between *B. roseum* and *B. Beyrichii* (Hsch.) C. Mueller. Comal leaves very numerous, lingulate, abruptly and short acuminate, revolute to $\frac{2}{3}$ or $\frac{3}{4}$, yellow-margined above with great confluent teeth ; costa stout, excurrent. Capsule pale, with a distinct, curved collum half as long, teeth papillose and hyaline above ; archegonia numerous ; lid convex short-apiculate, not oblique.

Hitherto confounded with *Bryum roseum* and quite common throughout Ontario ; generally in a barren state. On old logs and sometimes on limestone rocks in maple woods, at Ottawa, Belleville and Owen Sound, Ont. (*Macoun.*) Pine woods, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Common at London, Ont. (*J. Dearness.*) Tay and Canaan Forks, N.B. (*J. Moser.*) Also found in Ohio, United States. (*Prof. Wetherby* fide *Kindberg.*)

- (521.) **B. simplex**, Kindb. (n. sp.)

Allied to *Bryum roseum* ; differs in the shoots being short, about 2 cm., clavate, the comal leaves smaller, suboval, not cuneate at the base, fainter denticulate, not patent when moist, the cells shorter, nearly uniform, the squamiform leaves indistinct. Barren.

This species is also distinct from *Bryum Ontariense*, Kindb., and *Bryum lucidum*, Britt. We have not seen American specimens of the true *B. roseum*.

In small quantity, in crevices of rocks on the Gold Range, north of Griffin Lake, B.C. ; alt. 6,700 feet. August 9th, 1889. (*Macoun.*)

- (522.) **B. concinnatum**, Spruce ; Lesq. & James, Mosses of N. America, 240.

Greenland. (*Fl. Gr.*)

- (523.) **B. acutiusculum**, C. Muell. in Flora, N. 14 (1887).

Alaska. (*Krause.*)

- (524.) **B. bullatum**, C. Muell. in Flora N. 14 (1887).

Alaska. (*Krause.*)

- (525.) **B. stenotrichum**, C. Muell.

Alaska. (*Krause.*)

78. ZIERIA, Schimp.

- (526.) **Z. julacea**, Schimp.; Lesq. & James, Mosses of N. America, 240.

Bryum Zierii, Drumm. Musc. Bor.-Am., No. 252.

Rocks near the "Height of Land," Rocky Mountains. (*Drummond*.)
Crevices of damp rocks, Mount Albert, Gaspé Co., Que.; alt. 4,000
feet; on rocks along the Bow River at Morley, Rocky Mountains.
(*Macoun*.) Jakobshavn, Greenland. (*R. Brown*.)

- (527.) **Z. demissa**, Schimp.; Lesq. & James, Mosses of N. America, 241.

Bryum demissum, Drumm. Musc. Bor.-Am., No. 250.

Summits of the Rocky Mountains; rare. (*Drummond*.) Sabine
Island, Greenland. (*Fl. Gr.*)

79. MNIMUM, Linn.

- (528.) **M. cuspidatum**, Hedw.; Lesq. & James, Mosses of N. America, 242; Canadian Musci, No. 189.

Bryum cuspidatum, Drumm. Musc. Bor.-Am., No. 258.

Shady woods; at the roots of trees. (*Drummond*.) Forms large
patches among the roots of trees in woods, N.B. (*Fowler's Cat*.) Canaan
Forks and Tay, N.B. (*J. Moser*.) New Harbor and Broad Cove, New-
foundland. (*Rev. A. Waghorne*.) Shaded places, lake region, and at
Tobique River, N.B. (*Hay*.) Common in Pictou Co., N.S. (*McKay*.)
In woods, Levis Co., Que. (*St. Cyr*.) Miquelon Island. (*Delàmare*.)
Very abundant on earth nearly across the continent. Brackley Point,
Prince Edward Island; at Truro, N.S.; on Montreal Mountain, Que.;
common at Ottawa, Belleville, Owen Sound and other parts of Ontario;
Lake Nipigon and Lake Nipissing, Ont.; Swan Lake House, Man.;
Revelstoke, Eagle Pass, Quesnel and Agassiz, B.C. (*Macoun*.) Atha-
basca River, N.W.T. (*J. M. Macoun*.) Vicinity of Kingston, Ont.
(*Prof. Fowler*.) Saskatchewan River. (*Bourgeau*.) A common species
at London, Ont. (*J. Dearness*.)

Var. **tenellum**, Kindb. (n. var.)

Differs in all parts being smaller.

On earth in woods at Rustico Bay, Prince Edward Island, July 3rd,
1888. (*Macoun*.)

- (529.) **M. venustum**, Mitt.; Lesq. & James, Mosses of N. America, 242; Canadian Musci, No. 190.

M. Nevii, C. Muell.; Lesq. & James, Mosses of N. America, 242.*

Vancouver Island. (*Lyall*.) Crevices of rocks at the mouth of Pass Creek, Columbia River; also on logs at Hastings, B.C.; very common on rocks, Blackwater River, B.C.; crevices of rocks, around Victoria, Cedar Hill and Goldstream, Vancouver Island. (*Macoun*.)

- (530.) **M. macrocllare**, C. M. & Kindb. (n. sp.)

Bisexual. Loosely tufted. Stem densely foliate, sometimes stoloniferous. Leaves green or bright green, subdistichous not decurrent, pale-margined, simply or doubly dentate-ciliate, subobovate; the perichetial smaller and narrower; costa always excurrent. Capsule single (or 2-clustered), oblong, inclined or pendent; lid pale, conic, red-margined, short-rostrate; teeth yellow; pedicel purplish below, yellow above.

This fine species is allied to *Mnium venustum* Mitt. (*Mnium Nevii*, C. M.), but differing principally in the less densely foliate not clavate stems.

On rocks by a mountain brook along the Columbia River, above Revelstoke, B.C., May 14th, 1890; on earth in damp woods near Wooler, Northumberland Co., Ont. (*Macoun*.)

- (531.) **M. Drummondii**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 243; Canadian Musci, No. 191.

Pictou Co., N.S. (*McKay*.) In large patches on the ground in shady places, New Brunswick. (*Fowler's Cat.*) Tay, York Co., N.B. (*J. Moser*.) Along River Rouge, Argenteuil Co., Que. (*D'Urban*.) In damp woods around Ottawa; also at Belleville, and North Bay Lake Nipissing, Ont.; in cool woods, Swan Lake House, Swan Lake, Man.; in woods at Morley, Rocky Mountains, abundant at Revelstoke on the Columbia, also at Quesnel on the Fraser, and at McLeod's Lake, B.C. (*Macoun*.)

- (532.) **M. rostratum**, Schwaegr.; Lesq. & James, Mosses of N. America, 243; Canadian Musci, No. 192.

On stones in Beaver Creek, Hastings Road Crossing, Hastings Co., Ont.; damp limestone rocks at Owen Sound, Ont.; in the spray of Kakabeka Falls, west of Port Arthur, Lake Superior; near McLeod's Lake, lat. 55°; on stones along a brook one mile north of Revelstoke, B.C. (*Macoun*.) On rocks, North Thompson River, B.C. (*J. M.*

Macoun) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

(533.) **M. medium**, Bruch. & Schimp.; Lesq. & James, Mosses of N. America, 243.

Pend d'Oreille and Pack rivers, and Cascade Mountains, B.C. (*Lyall.*) Damp shaded ravines, Bass River, N.B. (*Fowler's Cat.*)

(534.) **M. affine**, Bland.; Lesq. & James, Mosses of N. America, 244; Canadian Musci, No. 193.

Bryum affine, Drumm. Musc. Bor.-Am., No. 256.

Miquelon Island. (*Delàmare.*) Harbor Breton, Forteau Bay, Newfoundland. (*Rev. A. Waghorne.*) Pictou Co., N.S. (*McKay.*) Damp shaded bank of a brook at Bass River, also at Fredericton, N.B. (*Fowler's Cat.*) Tay, York Co., N.B. (*J. Moser.*) Mansfield Island, Hudson Strait. (*R. Bell.*) On earth in a brook at Wycocogmah, Cape Breton; by a brook, Gaspé Co., Que.; quite common in swamps and springs throughout Ontario, at Ottawa, Belleville and Owen Sound; in swamps at Swan Lake House, Swan Lake, Man.; in a bog in Eagle Pass, west of Revelstoke, and at Sicamous and McLeod's Lake, B.C. (*Macoun.*) Wet place at Observation Point, Lake Winnipeg. (*J. M. Macoun.*) On earth along the River Rouge, Argenteuil Co., Que. (*D'Urban.*) Shady moist places. (*Drummond.*) Gananoque, near Kingston, Ont. (*Prof. Fowler.*) Common at London, Ont. (*J. Dearness.*) Sitka. (*Reth. Alask.*) Greenland. (*Rosenvinge.*)

(535.) **M. rugicum**, Laur.

Differs from *M. affine* principally in the nearly entire leaves, the upper not larger nor crowded.

Quite common in Dow's swamp, near Ottawa, Ont. (*Macoun.*) Smith's Sound, between lat. 78°—82°. (*Dr. Hayes.*)

(536.) **M. insigne**, Mitt.; Lesq. & James, Mosses of N. America, 244; Canadian Musci, No. 194.

Vancouver Island. (*Wood, Lyall.*) British Columbia. (*Lyall.*) On earth, in woods at Belleville, Ont.; in a bog, Eagle Pass, Gold Range, B.C.; also on earth at Blackwater River, and on logs at Hastings, B.C.; very abundant at Cedar Hill and Comox, Vancouver Island. (*Macoun.*) Wet places, Melaspina Inlet, B.C. (*Dawson.*)

Var. **intermedium**, Kindb. (n. var.)

Mnium medium, * *robustum*, Kindb. Torr. Bot. Club, XVII., 274.

Agrees with *Mnium insigne* in the leaves being long-decurrent, long-dentate, cells hexagonal-rotundate, &c. ; differs in the inflorescence. Synœcious.

The true *Mnium medium* (from the alps of Norway) has a very short stem, about 1 cm. long, the leaves crowded, short-dentate, and not decurrent.

On earth at Hunter's River, Prince Edward Island ; wet rocks, New Westminster, B.C. ; abundant in damp woods near Cedar Hill Church, Victoria, Vancouver Island, April 17th, 1887. (*Macoun.*)

(537.) **M. hornum**, Linn. ; Lesq. & James, Mosses of N. America, 245 ; Canadian Musci, No. 195.

Nova Scotia. (*N. B. James.*) In dense patches in shady woods at Truro, N.S. (*Fowler's Cat.*) Pictou Co., N.S., and Magdalen Islands. (*McKay.*) Miquelon Island. (*Delamare.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On earth near the sea at Yarmouth, and on rocks North-West Arm, Halifax, N.S. ; on rocks, Gunn River, Anticosti ; damp earth, Hunter's River, Prince Edward Island ; on earth in damp woods at Belleville, Wooler and Port Dover, Ont. (*Macoun.*) Freshwater and New Harbor, near St. John, Green Harbor, Tickle Harbor, Chance Cove, Grand Vache, Western Cove and Blaketown, Newfoundland. (*Rev. A. Waghorne.*)

(538.) **M. serratum**, Brid. ; Lesq. & James, Mosses of N. America, 245 ; Canadian Musci, No. 196.

Damp or wet rocks along streams, not uncommon. Jupiter River, Anticosti ; along the Ste. Anne des Monts River, Gaspé Co., Que. ; on earth, along the Sydenham River at Owen Sound ; on rocks in woods, Lake Nipissing, Ont. ; on earth by the torrent at Hector, Rocky Mountains ; wet rocks along the Columbia River at Revelstoke, on earth at Sicamous, Lytton, Yale and Hastings, Burrard Inlet, B.C. ; on earth at Victoria, Vancouver Island. (*Macoun.*)

Var. **Macounii**, Kindb. (n. var.)

Inflorescence parœcious. Leaves red-margined ; costa excurrent. Lid obliquely rostellate.

In dry woods, Rustico Bay, Prince Edward Island, July 16th, 1888. (*Macoun.*)

- (539.) **M. orthorrhynchum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 246; Canadian Musci, No. 479, in part.

Grand Falls of the Nipisiquit, N.B. (*Fowler's Cat.*) Canaan Forks and Tay, N.B. (*J. Moser.*) Pirate's Cove, Straits of Canso, N.S.; Ste. Anne des Monts River, Gaspé Co., Que.; on rocks in McKay's woods at Ottawa; in mud upon rocks at Owen Sound, Ont.; dry rocks at Lake Nepigon; crevices of rocks, three miles below Hector, Rocky Mountains; on rocks in Roger's Pass, Selkirk Mountains; on rocks, Cêche Creek, and Agassiz, B.C. (*Macoun.*) Crevices of rocks, Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Greenland. (*Fl. Gr.*)

- (540.) **M. decurrens**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 517.

Diœcious. Loosely tufted. Stem very loosely foliate, naked below, elongate. Leaves green or finally reddish, subdistichous, long-decurrent, often red at the margins and the wings, doubly dentate, lanceolate, the inner perichetial ones sublinear, red-cuspidate; cells smaller than in *Mnium umbratile*; costa sub percurrent, often red, in the inner perichetial leaves excurrent. Capsule single, oval, inclined; lid pale, conic, not margined, short-apiculate, not rostrate, teeth dark yellow; pedicel reddish.

This species resembles *Mnium orthorrhynchum* in the size of the capsule; the leaf cells are not much larger; from *Mnium umbratile* it is well distinct, also in the narrower leaves less twisted when dry.

On stones in a mountain brook entering the Columbia about a mile above Revelstoke, on the east side, May 4th, 1890; also at Pass Creek Falls, near Sproat, Columbia River, B.C. (*Macoun.*)

- (541.) **M. pseudo-lycopodioides**, C. M. & Kindb.

M. lycopodioides, Lesq. & James, Mosses of N. America, 246; Canadian Musci, No. 197.

M. orthorrhynchum, Canadian Musci, No. 471, in part.

This species is already described by Lesq. & James, but is a new species quite distinct and not corresponding to the true *M. lycopodioides*, Schw. (fide C. Muell.) From the closely allied *M. orthorrhynchum* it is separated by the excurrent costa of the upper leaves and the narrower capsule. Fortune Bay and Placentia Bay, Newfoundland. (*Rev. A. Waghorne.* In a damp shaded ravine, Bass River; also at Fredericton, N.B. (*Fowler's Cat.*) Rocky banks, Tobique River, N.B. (*Hay.*) Near the mouth of Martin River, Gaspé Co., Que. (*J. A. Allen.*) Banks of the River Rouge, Argenteuil Co., Que. (*D'Urban.*) Rocky

woods, Pirate's Cove, Straits of Canso, N.S.; on the bases of trees at Ottawa and Belleville; also in Kiladar, Addington Co., and on bases of trees shore of Lake Nepigon, Ont.; on earth, Porcupine Mountains, Man.; on earth, at Kananaskis, and Morley, Rocky Mountains; on the bases of trees in woods at Revelstoke, B.C. (*Macoun.*) In woods at London, Ont. (*J. Dearness.*)

- (542.) **M. inclinatum**, Lindb.; Canadian Musci, No. 551.

Bryum marginatum, Drum. Musc. Bor.-Am., No. 259.

On rocks and upon trunks of trees. (*Drummond.*) On old stumps in Dow's swamp, and on rocks in McKay's woods, Ottawa; crevices of rocks at Owen Sound, Ont.; on earth at Hector, and rocks at Banff, Rocky Mountains; on rocks on the west side of the Columbia River at Revelstoke, B.C. (*Macoun.*)

- (543.) **M. umbratile**, Mitt.; Lesq. & James, Mosses of N. America, 246; Canadian Musci, No. 520.

Mountain rocks, second point of wood, Portage River, Rocky Mountains. (*Drummond.*) Galton Mountains, British Columbia. (*Lyall.*) On earth and stones along a mountain brook entering the Columbia River, one mile above Revelstoke, B.C.; also at Quesnel, B.C. (*Macoun.*)

- (544.) **M. spinulosum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 247; Canadian Musci, No. 198.

Bryum spinosum, Drum. Musc. Bor.-Am., No. 257.

In woods near Smoky River. (*Drummond.*) Damp shaded places, Bass River, N.B. (*Fowler's Cat.*) Canaan Forks and Tay, N.B. (*J. Moser.*) Pine woods, Pirate's Cove, Straits of Canso, N.S.; roots of trees, Ste. Anne des Monts River, Gaspé Co., Que.; bases of trees in woods at Ottawa, Carleton Place, Belleville, Flinton, North Bay Lake Nipissing, Port Dover, Leamington, Owen Sound and Wooler, Ont.; woods, Lake Nepigon, Ont.; and roots of trees, Lake Winnipegosis, Man.; bases of trees at Revelstoke, Quesnel, McLeod's Lake, Sicamous and Hastings, B.C.; Mount Erskine, Salt Spring Island, Gulf of Georgia. (*Macoun.*) On earth, Melaspina Inlet, B.C. (*Dawson.*) In woods at Loughboro', near Kingston, Ont. (*Prof. Fowler.*)

- (545.) **M. Niagaræ**, Kindb. (n. sp.); Canadian Musci, No. 581.

Intermediate between *M. spinulosum* and *M. serratum*, but readily distinguished from both by the wide-mouthed capsule.

Loosely tufted without creeping stolons; fertile stem simple. Leaves

dark-green, crisped when dry ; indistinctly decurrent, doubly dentate at the red-margined borders ; the lower more loosely disposed, oblong, the upper lanceolate ; cells rotundate-hexagonal, often pellucid ; costa red-brown, excurrent, at least in the upper leaves. Perichetial leaves narrow sub-linear, dentate, the innermost very short. Capsule solitary, pendent, narrow, often appressed to the pedicel, subclavate-cylindric, constricted below the wide mouth ; teeth yellow ; lid obliquely rostrate ; pedicel pale-red. This species, synœcious, intermediate between *Mnium spinulosum* and *M. serratum*, is readily distinct in the wide-mouthed capsule.

On earth under trees near the water in the woods bordering the Whirlpool, Niagara Falls, Ont., June 6th, 1891. (*Macoun*.)

- (546.) **M. stellare**, (Reichardt) Hedw. ; Lesq. & James, Mosses of N. America, 247 ; Canadian Musci, No. 199.

M. orthorrhynchum, Canadian Musci, No. 471, in part.

Margins of brooks, Carleton, N.B. (*Fowler's Cat.*) Swamps, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) Roots of trees, Madeline River, Gaspé Co., Que. ; Dow's swamp, near Ottawa ; cedar swamps at Belleville and Owen Sound, Ont. ; crevices of rocks at Hector, Rocky Mountains. (*Macoun*.) In woods, London, Ont. (*J. Dearness*)

- (547.) **M. Blyttii**, Bruch & Schimp.

Bases of stumps at Morley, Rocky Mountains ; on earth among rocks Gold Range, north of Griffin Lake, B.C. ; alt. 6,500 feet. (*Macoun*.)

- (548.) **M. cinclidoides**, Hueben ; Lesq. & James, Mosses of N. America, 248.

On earth in wet woods, Brackley Point, Prince Edward Island ; wet swampy woods, Huntingdon, North Hastings, Ont. ; in wet boggy woods at Nanaimo, Vancouver Island. (*Macoun*) Frederikshaab, Greenland. (*Rosenvinge*.)

- (549.) **M. punctatum**, Hedw. ; Lesq. & James, Mosses of N. America, 248 ; Canadian Musci, No. 200.

Bryum punctatum, Drumm. Musc. Bor.-Am., Nos. 253, 254 and 272, in part.

Moist woods and marshes, York Factory, Lake Huron and Rocky Mountains. (*Drummond*.) Damp shady ravine, Bass River and at Fredericton, N.B. (*Fowler's Cat.*) Swamps, Tobique River, N.B. (*Hay*.) Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser*.) Pictou, N.S. (*McKay*.) Miquelon Island. (*Delàmare*.)

New Harbor, Topsail and Blaketown, Newfoundland; Battle Harbor, Labrador. (*Rev. A. Waghorne.*) In swamps, Levis Co., Que. (*St. Cyr.*) Cold swamps, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Swamps and wet woods across the continent. Jupiter River, Anticosti; Pirate's Cove, Straits of Canso, N.S.; Campbellton, N.B.; coast of Gaspé Co., Que.; swamps at Ottawa, Belleville, Port Dover and Owen Sound, Ont.; shore of Lake Superior and Kakabeka Falls west of that lake; at Banff, Stephen and Hector, Rocky Mountains; at Revelstoke, Sicamous and Yale, B.C.; common at Comox and Victoria, Vancouver Island. (*Macoun.*) In swamps, London, Ont. (*J. Dearness.*) On Mount Queest, Gold Range, B.C. alt., 7,000 feet; Kodiak Island and Sitka, Alaska, and Ounalaska, Behring Sea, 1891. (*J. M. Macoun.*) Swamps, Queen Charlotte Islands. (*Dawson.*) Sitka. (*Roth. Alask.*) Greenland. (*Fl. Gr.*)

- (550.) **M. subglobosum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 248; Canadian Musci, No. 201.

Cinclidium stygium, Drumm. Musc. Bor.-Am., No. 272, in part.

Swamps, Red Rock, Lake Superior; swamps at Lake Athabasca; along the "Telegraph Trail" north of Blackwater River, B.C.; peat swamps at Banff and Stephen, Rocky Mountains; on earth, Bear Creek, Roger's Pass, Selkirk Mountains. (*Macoun.*) Marshes near the Rocky Mountains. (*Drummond.*) Sabine Island and Ivigtut, Greenland. (*Fl. Gr.*)

- (551.) **M. hymenophyllum**, Byrol. Europ. IV. t. 400.

Upervivik and other localities in Greenland. (*Fl. Gr.*)

- (552.) **M. hymenophylloides**, Hueben; Lesq. & James, Mosses of N. America, 249.

Battle Harbor, Labrador. (*Rev. A. Waghorne.*) On damp rocks, Pirate's Cove, Straits of Canso, N.S.; under flat rocks, on earth, at Hector and three miles below, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (553.) **M. Menziesii**, C. Muell.; Lesq. & James, Mosses of N. America, 249; Canadian Musci, No. 202.

In woods at Hot Springs, Kootanie Lake, and in abundance on logs at Hastings, B.C.; quite common at Cedar Hill and Victoria, Vancouver Island. (*Macoun.*) On earth in woods, Melaspina Inlet, B.C. (*Dawson.*) Sitka. (*Roth. Alask.*)

80. CINCLIDIUM, Swartz.

- (554.) **C. stygium**, Swartz ; Lesq. & James, Mosses of N. America, 250 ; Drumm. Musc. Bor.-Am., No. 272, in part.

C. subrotundum, Canadian Musci, No. 206.

Wet ground, Forteau, Labrador. (*J. A. Allen*.) Swamps, Salt Lake, and Beesie River, Anticosti ; in swamps at Truro, N.S. ; swamps at Banff and at Kicking Horse Lake, Rocky Mountains. (*Macoun*.) Swamps in the Rocky Mountains. (*Drummond*.)

- (555.) **C. subrotundum**, Lindb. ; Lesq. & James, Mosses of N. America, 250.

Greenland. (*Vahl*.) Labrador. (*Breutel*.) [Broad Cove, Newfoundland. (*Rev. A. Waghorne*.)] ?

SUB-TRIBE I. AULACOMNIEÆ.

81. AULACOMNIUM, Schwaegr.

- (556.) **A. androgynum**, Schwaegr ; Lesq. & James, Mosses of N. America, 252 ; Canadian Musci, No. 207.

On earth at the bases of trees in woods, Pirate's Cove, Straits of Canso, N.S. ; on old logs at Hastings, Burrard Inlet, B.C. ; very common on old logs, stumps and rocks at Victoria, Nanaimo, and Comox, Vancouver Island. (*Macoun*.) On rocks, Melaspina Inlet, B.C. (*Dawson*.) Vancouver Island. (*Lyll*.)

- (557.) **A. palustre**, Schwaegr ; Lesq. & James, Mosses of N. America, 252 ; Canadian Musci, No. 208.

Bryum palustre, Drumm. Musc. Bor.-Am., No. 242.

Marshy places ; frequent. (*Drummond*.) Common about New Harbor, Newfoundland ; Battle Harbor, Cape Charles and Fox Harbor, Labrador. (*Rev. A. Waghorne*.) Swamps, Bass River, N.B. (*Fowler's Cat*.) Abundant at Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser*.) Nottingham Island, Hudson Strait. (*R. Bell*.) Pictou Co., N.S. (*McKay*.) Vicinity of Quebec. (*St. Cyr*.) Miquelon Island. (*Delamare*.) In bogs at Louisburg, Cape Breton ; also at Truro, N.S. ; in bogs, Tignish, Prince Edward Island ; boggy ground, Gaspé Co., Que. ; in swampy woods throughout Ontario and westward to the Pacific, fruiting abundantly at Banff in the

Rocky Mountains, at Revelstoke, B.C. and on Vancouver Island. (*Macoun.*) Along the Athabasca River. (*J. M. Macoun.*) Dorchester, near London, Ont.; common. (*J. Dearness.*) Saskatchewan and Rocky Mountains. (*Bourgeau.*) Cascade Mountains. (*Lyall.*) Kotzebue Sound, Sitka and Nulato. (*Roth. Alask.*) Jakobshavn and Godthaab, Greenland. (*R. Brown.*)

Var. **Imbricatum**, Bruch & Schimp.; Canadian Musci, No. 209.

New Harbor, Newfoundland. (*Rev. A. Waghorne.*) In swamps at Belleville, Ont.; on rocks at North Arm of Burrard Inlet, B.C.; common on rocks at Nanaimo, Vancouver Island. (*Macoun.*) Boggy ground, east side of Lake Winnipeg. (*J. M. Macoun.*) Mountains east of Adams Lake, B.C.; alt. 5,600 feet. (*Dawson.*)

Var. **polycephalum**, Bruch & Schimp.; Canadian Musci, No. 210.

In boggy woods at Brackley Point, Prince Edward Island; common in wet woods at Belleville, Ont.; also North Bay, Lake Nipissing and Lake Nepigon, Ont.; marshy spots at Morley, Rocky Mountains; also at Goldstream, Vancouver Island. (*Macoun.*) Abundant at New Harbor, Newfoundland; Deep Water Creek and Fox Harbor, Labrador. (*Rev. A. Waghorne.*)

Var. **laxifolium**, Kindb. (n. var.)

Leaves laxly disposed.

On earth in boggy soil, Roger's Pass, at the "Summit," Selkirk Mountains, B.C., August 6th, 1890. (*Macoun.*)

(558.) **A. turgidum**, Schwaegr.; Lesq. & James, Mosses of N. America, 253.

Bryum turgidum, Drum. Musc. Bor.-Am., No. 243.

Moist mountainous situations; rare in fructification. (*Drummond.*) Seal Islands and Battle Harbor, Labrador. (*Rev. A. Waghorne.*) Whale Island, Chateau Bay, Labrador. (*J. A. Allen.*) Upper Savage Islands, Hudson Strait. (*R. Bell.*) On both sides of Baffin's Bay. (*Ross' Voyage.*) Smith's Sound and West Greenland. (*Dr. Kane.*) Women's Islands, Baffin's Bay. (*R. Brown.*) Smith's Sound between lat. 78°—83°. (*Dr. Hayes.*) Kotzebue Sound. (*Roth. Alask.*) St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*) Common in Greenland. (*Fl. Gr.*)

- (559.) **A. heterostichum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, No. 211.

Arrhenopterum heterostichum, Drumm. Musc. Bor.-Am., No. 274.

Upper Canada (Ontario). (*Drummond.*) Abundant at the bases of trees in damp woods four miles beyond Ferry Point opposite Belleville, Ont.; also in woods, Seymour, Northumberland Co., Ont.; abundant in damp woods at Leamington, Ont. (*Macoun.*) Near London, Ont. (*J. Dearness.*)

SUB-TRIBE II. TIMMIEÆ.

82. TIMMIA, Hedw.

- (560.) **T. megapolitana**, Hedw.; Lesq. & James, Mosses of N. America, 254; Canadian Musci, No. 212; Drumm. Musc. Bor.-Am., 273.

Moist shady rocks; common. (*Drummond.*) At the bases of trees in swamps, Ste. Anne des Monts River, Gaspé Co., Que.; Dow's swamp, Ottawa; abundant at Belleville and Owen Sound, also at Leamington, Ont.; crevices of rocks at Morley and Devil's Lake, Rocky Mountains; also along Lesser Slave Lake, Athabasca; vicinity of Victoria, Vancouver Island. (*Macoun.*) Athabasca River at the forks of the Clearwater. (*J. M. Macoun.*) London, Ont. (*J. Dearness.*) Vancouver Island and Galton Mountains, B.C. (*Lyall.*) Saskatchewan River. (*Bourgeau.*) Greenland. (*Fl. Gr.*) Conception Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (561.) **T. Austriaca**, Hedw.; Lesq. & James, Mosses of N. America, 255; Canadian Musci, No. 213.

Cascade Mountains and Pack River, B.C. (*Lyall.*) Damp rocks, Hudson Hope, Peace River, lat. 56°; on rocks at Hector, Rocky Mountains; common along the Columbia River above Revelstoke, also at Sicamous, Cache Creek and Yale, B.C.; common on wet rocks at Nanaimo and Goldstream, Vancouver Island. (*Macoun.*) Alert Bay, Vancouver Island. (*Dawson.*) Greenland. (*Fl. Gr.*)

- (562.) **T. Norvegica**, Zett. Bull. Bot. Soc. Fr., 1862; Canadian Musci, No. 586.

Bank of the torrent at Hector, and in mud at the second creek east of that point, August 17th, 1890, and in the "Dry Cañon," discharge of Devil's Lake, Rocky Mountains, 1891. (*Macoun.*) Greenland. (*Fl. Gr.*)

FAMILY XVII. POLYTRICHEÆ.

83. ATRICHUM, Beauv.

- (563.) **A. undulatum**, Beauv.; Lesq. & James, Mosses of N. America, 256; Canadian Musci, No. 214.

On banks, at the "Height of Land," Rocky Mountains; but rare. (*Drummond.*) New Harbor Bay Bull Arm, Chance Cove and Broad Cove, Newfoundland. (*Rev. A. Waghorne.*) Miquelon Island. (*Deldmare.*) Pictou Co., N.S. (*McKay.*) At Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser.*) On the ground in Kent Co., N.B. (*Fowler's Cat.*) On earth at Rustico Bay, Prince Edward Island; common on banks in woods at Ottawa, Lake Nipissing, Belleville and Owen Sound, Ont.; wet earth and turned-up stumps at Hastings and Yale, B.C.; common at Comox and Victoria, Vancouver Island. (*Macoun.*) Very common on knolls near London, Ont. (*J. Dearness.*)

- (564.) **A. angustatum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 256; Canadian Musci, No. 215.

Polytrichum angustatum, Drumm. Musc. Bor.-Am., No. 285.

New Harbor, Broad Cove and Bay Bull Arm, Newfoundland. (*Rev. A. Waghorne.*) On the ground at Bass River, N.B. (*Fowler's Cat.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) In dry sandy woods at Belleville, Ont.; also in Seymour West, Northumberland Co., Ont.; in woods at Leamington, Ont.; in woods, McLeod's Lake, lat. 55°, B.C. (*Macoun.*) Banks, &c., in Canada. (*Drummond.*) Vicinity of London, Ont. (*J. Dearness.*)

- (565.) **A. Selwyni**, Aust.; Lesq. & James, Mosses of N. America, 256; Canadian Musci, No. 216.

Crevices of rocks, House Mountain, near Lesser Slave Lake, September 18th, 1872; on damp earth in Roger's Pass, and along Beaver Creek, Selkirk Mountains; along the Columbia River at Revelstoke, B.C. (*Macoun.*)

- (566.) **A. Lescurii**, James; Lesq. & James, Mosses of N. America, 257.

Alaska. (*Kellogg.*) Sitka Island, Alaska. 1891. (*J. M. Macoun.*)

This species occurs also in Japan, but in the specimens collected there by Mr. Bisset (in herb. *Kindberg*) the stem is at least a third shorter.

- (567.) **A. crispum**, James ; Lesq. & James, Mosses of N. America, 257 ; Canadian Musci, No. 540.

A. xanthopelma, Canadian Musci, No. 463.

On earth in woods near Wooler, Northumberland Co., Ont. ; also in woods at Port Dover and Leamington, Ont. ; on earth along the Columbia River, about a mile above Revelstoke, B.C. ; abundant on a loamy bank at Craigellachie, Eagle Pass, B.C. (*Macoun.*)

- (568.) **A. parallelum**, Mitt. ; Lesq. & James, Mosses of N. America, 258 ; Canadian Musci, No. 426.

Polytrichum undulatum, Drumm. Musc. Bor.-Am., No. 286.

Grand Côte, Rocky Mountains. (*Drummond.*) Wet rocks in Roger's Pass and on the higher slopes of Mount Cheops, Selkirk Mountains ; also on the Gold Range north of Griffin Lake, B.C. ; alt. 6,500 feet. (*Macoun.*)

- (569.) **A. lelophyllum**, Kindb., Bull. Torr. Bot. Club XVII, 275 ; Canadian Musci, No. 217.

Plants erect, simple, naked below, densely foliate above, about 5-7 cm. high. Leaves smooth, lower very small, upper lanceolate and acute-cuspidate, not margined, the base scarcely broader ; borders sharply serrate with large teeth, the basal only, entire ; basilar cells narrow, the other round-hexagonal, all pellucid ; costa percurrent ; lamellæ 6, disappearing below the apex, entire or slightly crenulate. Capsule single, 0.5-0.6 cm. long, sub-cylindrical, thicker below, 0.2 cm. broad, slightly curved, constricted at the mouth ; lid obliquely rostrate from the conic base ; perichetial leaves long-cuspidate with an excurrent costa ; pedicel bright red, 4-5 cm. long. Diccious.

This fine species differs considerably from *A. parallelum* in the smooth leaves, &c.

In damp woods on the lower slopes of Mount Arrowsmith, Vancouver Island, July 18th, 1887 ; on earth in Roger's Pass, Selkirk Mountains, B.C., August, 1890. (*Macoun.*)

- (570.) **A. rosulatum**, C. M. & Kindb. (n. sp.)

Diccious. Stem indistinct or very short. Leaves rosulate, undulate, not margined, dentate at the middle, sometimes beset with transverse rows of small scales, the lower sub-oblong, the upper short-lanceolate, subobtusate ; costa scarcely percurrent, nearly smooth. Barren.

This species is not to be confounded with our other species, though

the scales of the leaves are not always to be found. All other species, except *A. leiophyllum* and *A. parallelum*, have margined leaves.

On the bank of the Columbia River, between the railway bridge and the whirlpool, west side of River at Revelstoke, B.C., May 6th, 1890. (*Macoun.*)

84. OLIGOTRICHUM, DC.

(571.) *O. aligerum*, Mitt. ; Lesq. & James, Mosses of N. America, 258 ; Canadian Musci, No. 218.

Grand Côte, Rocky Mountains. (*Drummond.*) On clay banks by roadsides at Hastings, B.C. ; also on wet clay banks, west of Glacier Hotel, Selkirk Mountains, B.C. (*Macoun.*)

(572.) *O. Lyallii*, Lindb. ; Lesq. & James, Mosses of N. America, 259.

In swampy places on the east side of the Cascade Mountains, British Columbia, at an elevation of 7,000 feet, July, 1860. (*Lyall.*)

(573.) *O. hercynicum*, (Ehrh.) DC., Fl. Fr. I. 492.

Not uncommon in Greenland. (*Fl. Gr.*) St. Lawrence Island, Behring Sea, 1891. (*J. M. Macoun.*)

Var. *latifolium*, C. M. & Kindb. (n. var.)

Differs in the shorter and entire leaves ; the capsule is distinctly plicate.

By a glacier stream descending from Hermit Mountain in Roger's Pass, Selkirk Mountains, July 31st, 1890. (*Macoun.*)

85. PSILOPILUM, Brid.

(574.) *P. arcticum*, Brid. ; Lesq. & James, Mosses of N. America, 260.

Peat bogs ; Labrador, Greenland and Arctic America. (*Lesq. & James.*) Jakobshavn, Greenland. (*R. Brown.*) St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*)

86. POGONATUM, Beauv.

(575.) *P. brevicaulis*, Beauv. ; Lesq. & James, Mosses of N. America, 260.

P. capillare, Canadian Musci, No. 377.

Pictou Co., N.S. (*McKay.*) On clayey soil, Bass River and Carleton, N.B. (*Fowler's Cat.*) On clay by the roadside, beyond the marsh,

near Shaw's, Brackley Point, Prince Edward Island ; also at Casselman, near Ottawa, Ont. (*Macoun.*)

(576.) **P. capillare**, Brid. ; Lesq. & James, Mosses of N. America, 261.

Not uncommon in Greenland. (*Fl. Gr.*) Miquelon Island. (*Delà-mare.*) Chance Cove, Newfoundland. (*Rev. A. Waghorne.*)

(577.) **P. dentatum**, Brid. ; Lesq. & James, Mosses of N. America, 261 ; Canadian Musci, No. 544.

P. urnigerum, Canadian Musci, No. 219, in part.

Polytrichum urnigerum, Drumm. Musc. Bor.-Am., No. 284.

Banks amongst the Rocky Mountains. (*Drummond.*) North-west coast. (*Nelson, Menzies.*) Alaska. (*Bischoff.*) On the summit of Mount Queest, Gold Range, B.C., alt. 7,000 feet ; St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*) Very abundant by the side of the railway in Roger's Pass and by Beaver Creek, Selkirk Mountains. (*Macoun.*) *Polytrichum capillare*, Michx., is probably a form of *P. dentatum*, Menzies, with the stem low and nearly simple.

(578.) **P. contortum**, Lesq. ; Lesq. & James, Mosses of N. America, 262.

Alaska. (*Kellogg.*) North-west coast. (*Menzies.*) On the roots of upturned Douglas Fir in woods along the Columbia River, above Revelstoke, B. C. (*Macoun.*)

(579.) **P. erythrodontium**, Kindb. (n. sp.)

P. contortum, Canadian Musci, No. 430.

Stem erect, simple, or furnished with a short innovation above, naked below, 10-12 cm. long. Leaves green, spreading, flexuous and not incurved when dry, plane and patent when moist, linear-lanceolate, acuminate, red-denticulate all around, not sheathing, undulate, hispid or margined ; cells round-hexagonal, chlorophyllose, also the marginal ; lamellæ distinct and not confluent, numerous, 20-30 ; costa narrow, percurrent. Capsule single, short, ovate-cylindrical, erect and pillose, wide-mouthed ; teeth red-brown, narrowly hyaline-margined all around, narrowly lingulate ; pedicel about 4 cm. long. Dioecious.

This species is allied to *P. contortum* and *P. atrovirens*, but very dis-

tinct. Dr. C. Mueller considers these (three) as belonging to a peculiar subgenus (section) *Catharinella*.

By a roadside in wet woods near Comox, Vancouver Island, May 3rd, 1887. (*Macoun*). Prince of Wales Island, Alaska. 1891. (*J. M. Macoun*). Stanley Park, Vancouver City, B.C. (*Law*).

(580.) **P. atrovirens**, Mitt.; Lesq. & James, Mosses of N. America, 262.

Sitka. (*Barclay*.) Abundant by roadsides at Hastings, Burrard Inlet, B.C., April 6th, 1889. (*Macoun*.)

(581.) **P. urnigerum**, Beauv.; Lesq. & James, Mosses of N. America, 262; Canadian Musci, No. 219, in part.

On earth, New Harbor, Broad Cove, Chance Cove and Harbor Breton, Newfoundland. (*Rev. A. Waghorne*.) Dry turf on a ledge, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) In woods at Truro, N.S.; very abundant by roadsides at Cape Rosier and other points, Gaspé Co., Que.; along Bear Creek, Roger's Pass, Selkirk Mountains, B.C. (*Macoun*.) Vicinity of Quebec. (*St. Cyr*.)

(582.) **P. alpinum**, Roehl.; Lesq. & James, Mosses of N. America, 263; Canadian Musci, No. 220.

Polytrichum alpinum, Drumm. Musc. Bor.-Am., No. 282.

Little Bay Islands, Western Cove, Cape Charles and Deep Water Bay, Labrador; on rocks, Harbor Breton and Trinity Bay, Newfoundland. (*Rev. A. Waghorne*.) Rocks of Lake Superior; and in various parts of Canada. (*Drummond*.) On the ground at Restigouche, N.B. (*Fowler's Cat*.) Wet rocks, Tobique River, N.B. (*Hay*.) Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser*.) Crevices of rocks, Mount Albert, Gaspé Co., Que.; wet rocks, Sudbury Junction, crevices of rocks, 10 miles south of Fort William, Lake Superior, along Nepigon River; on perpendicular rocks, head of Lake Louise, Rocky Mountains; along Bear Creek in Roger's Pass, Selkirk Mountains; on rocks along the Columbia River at Revelstoke; also at Yale on the Fraser River, B.C.; on Mounts Benson and Arrow-smith, Vancouver Island. (*Macoun*.) Wet rocks, Queen Charlotte Islands. (*Da con*.) Hall Island, St. Paul Island and Ounalaska, Behring Sea. 1891. (*J. M. Macoun*.) Kotzebue Sound and Sitka, (*Roth. Alas*) Islands in Baffin's Bay. (*R. Brown*.) Frederikshaab, Greenland. (*Fl. Gr.*)

Var. **septentrionale**, Brid. ; Canadian Musci, No. 427.

Polytrichum septentrionale, Drumm. Musc. Bor.-Am., No. 283.

Summit of Rocky Mountains. (*Drummond.*) Abundant on the summit of Copper Mountain, on the south side of the Bow River valley, at Castle Mountain, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*) St. Lawrence, St. Paul and St. George islands, Behring Sea. 1891. (*J. M. Macoun.*)

Var. **brevifolium**, Brid.

On rocks, Digge's Island, Hudson Strait. (*R. Bell.*) Greenland. (*Fl. Gr.*)

Var. **microdontium**, Kindb., Ott. Nat. Vol. V.

Differs in the leaves being nearly entire or indistinctly denticulate. St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*)

(583.) **P. Macounii**, Kindb., Bull. Torr. Bot. Club, XVI. 96; Canadian Musci, No. 546.

Dioecious ; laxly caespitose, green, brownish when old. Stems rooting only at base, ascending 8-15 cm. high, dichotomous branching. Leaves very long (1.5-2 cm.) ; when dry, spreading or patulose, flexuose and convolute ; when humid, subplane, linear-lanceolate ; cuspidate from the short, sheathing, dirty-white base, densely and sharply serrate, spinulose and reddish at back towards the apex ; lamellæ numerous (about 60), entire, each of round hexangular cells, costa long-excurrent ; lower cells of the leaf-base elongate and narrow, the upper oblong, the cell-walls often oblique and irregular. Perichetial leaves shorter and more acute than the other ; seta robust, 3-6 cm. long, pale, finally orange. Vaginule glabrate, pale ; capsule 6 mm. long, obliquely inclined, cylindric-oblong without neck at the base, narrowed below the mouth, constricted, not angulose, finally dark-brown, at first greenish with the mouth orange, 6-7 mm. long and 2 mm. broad ; lid large conic-subulate, at base orange, 2 cm. long ; teeth of peristome 32, short.

This robust and very distinct species is allied to the Japonian *Polytrichum grandifolium*, Lindb.

On rocks and earth in Roger's Pass, Selkirk Mountains ; on rocks at Revelstoke on the Columbia and on earth at Hastings, Burrard Inlet, B.C. ; on the slopes of Mount Arrowsmith, Vancouver Island. (*Macoun.*) On rocks, Alert Bay, Vancouver Island. (*Dawson.*) Prince of Wales Island, Alaska, 1891. (*J. M. Macoun.*)

- (584.) **P. polare**, C. Muell., Bot. Zeit. 205. 1859.

Collected in Eastern Greenland and on Sabine Island. (*Pansch.*)

87. POLYTRICHUM, Linn.

- (585.) **P. sexangulare**, Flörke; Bull. Torr. Bot. Club, XVI., 96;
Canadian Musci, No. 428.

On the summit of Copper Mountain, south of the Bow River at Castle Mountain, Rocky Mountains; on Mount Cheops, Selkirk Mountains, alt. 7,500 feet, B.C.; also on the Gold Range, north of Griffin Lake, B.C., alt. 7,000 feet. (*Macoun.*) Herald Island, north of Alaska. (*Nelson.*) Jakobshavn. (*R. Brown.*) Common in Greenland. (*Fl. Gr.*)

- (586.) **P. gracile**, Menz.; Lesq. & James, Mosses of N. America. 264; Canadian Musci, No. 478.

New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Miquelon Island, (*Delàmare.*) Bogs near St. Andrews, N.B. (*Hay.*) Canaan Forks, N.B. (*J. Moser.*) North shore of Lake Superior. (*Agassiz.*) Mer Bleue, 12 miles from Ottawa, Ont.; on earth near the Gravel Pit, Belleville, Ont.; on earth and rocks in Roger's Pass, Selkirk Mountains, B.C.; on earth, Gold Range, north of Griffin's Lake, B.C.; alt. 7,000 feet. (*Macoun.*) Kotzebue Sound. (*Roth. Alask.*)

- (587.) **P. formosum**, Hedw.; Lesq. & James, Mosses of N. America, 264; Canadian Musci, No. 429.

Miquelon Island. (*Delàmare.*) [Bay Bull Arm, Newfoundland. (*Rev. A. Waghorne.*)] (?) On earth in woods, Pelee Point, Lake Erie; on rocks at Revelstoke, and logs at Hastings, B.C. (*Macoun.*) Sitka Island, Alaska. 1891. (*J. M. Macoun.*) Alaska. (*Nelson.*)

- (588.) **P. Ohlense**, Ren. & Card.; Coult. Bot. Gaz. XIII., 199;
Canadian Musci, No. 221.

Stem erect, simple or bipartite, 3-6 cm. long, a little tomentose below. Leaves spreading when moist, erect, flexuous when dry, from a sheathing base linear-acuminate, cuspidate, serrate; lamellæ about 50, each in section of a row of 5-7 cells, the marginal one much larger, transversely dilated, about twice broader than high, very slightly convex, often almost plane. Perichetial leaves longer with a longer hyaline base. Pedicel 4-8 cm. long, reddish below, pale above. Capsule erect, finally horizontal, tetragonal or pentagonal, rarely hexagonal, acute-angled, rather narrowed toward the base, with a very

small or indistinct hypophysis; length 5-7 mm., diameter 2-2½ mm.; lid conic-acuminate, red at margin.

This species seems to include the greater part of the specimens formerly referred to *P. formosum*. On the ground at Bass River, N.B. (*Fowler's Cat.*) Canaan Forks, N.B. (*J. Moser.*) Woods, Montcalm Co., Que. (*D'Urban.*) In woods, Beesie River, Anticosti; woods, North Sydney, Cape Breton; Mount Stewart and Brackley Point, Prince Edward Island; along the Ste. Anne de Monts River, Gaspé Co., Que.; on earth in woods at Casselman, near Ottawa; on earth in woods in Peterboro and Victoria counties, Ont.; also at North Bay Lake Nipissing; at Leamington, Lake Erie; in woods, near Fort William, Lake Superior; on earth and rocks along the Columbia River, above Revelstoke, B.C. (*Macoun.*)

(589.) **P. conorhynchum**, Kindb. (n. sp.)

Differs from *Polytrichum formosum* in the leaves being canaliculate and the capsule shorter and broader, not attenuate at the base; differs from *Polytrichum gracile* also in the capsule, which is distinctly acute-angulate, the conic-rostrate lid and the long-sheathing leaves.

In a small bog along the C. P. Railway in Roger's Pass east of the summit, Selkirk Mountains, July 31st, 1890. (*Macoun.*)

(590.) **P. piliferum**, Schreb.; Lesq. & James, Mosses of N. America, 264; Canadian Musci, No. 222; Drumm. Muse. Bor.-Am., No 278.

Grassy Mountains. (*Drummond.*) Gravelly knolls, Bass River, N.B. (*Fowler's Cat.*) Ste. Clotilde, Arthabaska Co., Que. (*St. Cyr.*) Miquelon Island. (*Delàmare.*) On rocks, North West Arm, Halifax, N.S.; on earth in sandy woods, Murray, Northumberland Co., Ont.; barren ground and rocks, Lake Nepigon and Lake Nipissing, Ont.; at Hector, Rocky Mountains; on rocks at Deer Park and Sproat, Columbia River; on earth at New Westminster Junction, B.C.; very common at Victoria and Cedar Hill, also Mount Benson near Nanaimo, Vancouver Island. (*Macoun.*) Vancouver Island. (*Lyall.*) Alaska. (*Nelson.*) Kobbefjord, West Greenland, 28th June, 1884. (*Warming & Holm.*)

Var. **Hoppel**, Rabenh.

On Castle Mountain, Rocky Mountains; alt. 7,500. (*Macoun.*)

(591.) **P. hyperboreum**, R. Brown, Fl. Melv. Is., 69.

Melville Islands. (*R. Brown.*) Common in Greenland. (*Fl. Gr.*)

(592.) **P. boreale**, Kindb., Laubm. Schwed. & Norweg.

Differing from the nearly allied *P. hyperboreum*, R. Br., principally in the leaves being distinctly dentate above; the apex is hyaline in the upper part, red in the lower.

St. Paul Island, Behring Sea, 30th July, 1891. (*J. M. Macoun.*)

(593.) **P. juniperinum**, Willd.; Lesq. & James, Mosses of N. America, 265; Canadian Musci, No. 223; Drumm. Musc. Bor.-Am., No. 277.

P. commune var. *formosum*, Drumm. Musc. Bor.-Am., No. 276.

P. pallidisetum var. Drumm. Musc. Bor.-Am., No. 280.

Grassy mountainous situations (No. 277); about York Factory, Hudson Bay (No. 276); upon the "Height of Land," Rocky Mountains (280). (*Drummond.*) Both sides of Baffin's Bay. (*Capt. Ross.*) Smith's Sound. (*Dr. Kune.*) Christianshaab, Greenland. (*Fl. Gr.*) Smith's Sound, between lat. 78°—82°. (*Dr. Haves.*) Ste. Clotilde, Arthabaska Co., Que. (*St. Cyr.*) Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) Dry hills and gravelly knolls everywhere in New Brunswick. (*Fowler's Cat.*) Dry places, Tobique River, N.B. (*Hay.*) In woods by stumps, Canaan Forks and Tay, N.B. (*J. Moser.*) Quite common around St. John and Placentia Bay, Newfoundland; Little Bay Islands, Labrador. (*Rev. A. Waghorne.*) Very abundant from the Atlantic to the Pacific, chiefly in old pastures by stumps and by lumber roads in woods, just as common west of the Rocky Mountains as east of them. (*Macoun.*) Saskatchewan. (*Bourgeau.*) Vancouver Island and British Columbia. (*Lyall.*) Common on knolls in woods and on upturned pine stumps, Dorchester and London, Ont. (*J. Dearness.*) Kotzebue Sound and Nulato. (*Roth. Alaska.*)

Var. **Waghornel**, Kindb. (n. var.)

Differs in the leaves being dentate in the upper part, not at the lower arm only; marginal cells papillose, also other characters as in true *P. juniperinum*.

Deep Water Creek, Venison Tickle and Cape Charles, Labrador, August, 1891. (*Rev. A. Waghorne.*)

(594.) **P. strictum**, Banks; Lesq. & James, Mosses of N. America, 265; Canadian Musci, No. 224.

P. alpestre, Drumm. Musc. Bor.-Am., No. 281.

Swampy places; frequent. (*Drummond.*) Canaan Forks, N.B. (*J. Moser.*) In swamps at Nain, Labrador. (*R. Bell.*) On rocks, River

Rouge, Argenteuil Co., Que. (*D'Urban.*) Miquelon Island. (*Delà-mare.*) Harbor Breton and Broad Cove, Newfoundland. (*Rev. A. Waghorne.*) In bogs, Jupiter River, Anticosti; at Truro, N.S.; Brackley Point, and Otter Pond, Prince Edward Island; on Mount Albert, Gaspé Co., Que.; at Morley and Banff, Rocky Mountains; and common in Roger's Pass, Selkirk Mountains; in bogs, at Blackwater River, and McLeod's Lake, B.C.; also Peace River near Dunvegan, lat. 56°. (*Macoun.*) Mountains south of Tulameen River, B.C.; alt. 6,000 feet. (*Dawson.*) Cascade Mountains, B.C. (*Lyall.*) Kotzebue Sound and Sitka. (*Roth. Alask.*) Jakobshavn, Greenland. (*R. Brown.*) Common in Greenland. (*Fl. Gr.*)

(595.) **P. commune**, Linn.; Lesq. & James, Mosses of N. America, 266.

P. pallidisetum, Drum. Musc. Bor.-Am., No. 279.

In Canada. (*Drummond.*) Pictou Co., N.S. (*McKay.*) Miquelon Island. (*Delà-mare.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Damp shady places; common at Bass River, N.B. (*Fowler's Cat.*) In woods, Belledune, N.B. (*Chalmers.*) Canaan Forks, N.B. (*J. Moser.*) Damp woods, Missinaibi River, Ont. (*R. Bell.*) Common in swamps near London, Ont. (*J. Dearness.*) Sitka. (*Roth. Alask.*) Not uncommon in Greenland. (*Fl. Gr.*)

Var. **perligoniale**, Bruch & Schimp.

In swamps near Stirling, Hastings Co., Ont.; abundant at Pass Creek near Sproat, Columbia River, B.C.; also at McLeod's Lake, lat. 55°, B.C. (*Macoun.*)

Var. **Canadense**, Kindb. (n. var.); Canadian Musci, No. 563.

Polytrichum commune, Canadian Musci, No. 225.

Differs principally in the low stem, about 6-8 cm. high, the pedicel not much longer, the blackish capsule much shorter than in the type which probably is very rare in Canada and only once examined by Kindberg.

On damp earth at Rustico Bay and Royalty Junction, Prince Edward Island; woods, Mount Albert, Gaspé Co., Que.; McKay's woods, Ottawa, also at Belleville, Ont.; damp woods, Lake Nepigon; abundant on earth in the railway cuttings above the trestle at Albert Cañon Station, Selkirk Mountains, B.C., May 29th, 1890. (*Macoun.*)

FAMILY XVIII. BUXBAUMIÆ.

88. DIPHYSCIUM, Mohr.

- (596.) **D. foliosum**, Mohr; Lesq. & James, Mosses of N. America, 267; Canadian Musci, No. 226.

Pictou and Halifax counties, N.S. (*McKay*.) On clay soil, Truro, N.S. (*Fowler's Cat.*) On earth in woods at Rustico Bay, Prince Edward Island; on earth in woods, North Hastings, Ont.; also on earth in woods at Bismarck, Elgin Co., Ont. (*Macoun*.)

89. BUXBAUMIA, Hall.

- (597.) **B. aphylla**, Linn.; Lesq. & James, Mosses of N. America, 268.

Milldam, Pictou, Co., N.S. (*McKay*.) On earth, vicinity of Halifax, N.S. (*Lawson*.) On rocks at Chelsea, Que., 8 miles from Ottawa. (*Fletcher*.) On earth along the Columbia River above Revelstoke; on earth and rocks, Deer Park, Lower Arrow Lake, Columbia River; also in woods at Hastings, Burrard Inlet, B.C. (*Macoun*.) Cascade Mountains, B.C. (*Lyall*.)

SERIES II. PLEUROCARPI.

FAMILY XIX. FONTINALEÆ.

90. FONTINALIS, Dill.

- (598.) **F. antipyretica**, Linn.; Lesq. & James, Mosses of N. America, 268; Canadian Musci, No. 227; Drumm. Musc. Bor.-Am., No. 232.

Mountain rivulets. (*Drummond*.) Pictou Co., and north-east of Cobequid Mountains, N.S. (*McKay*.) Ponds at Green Island and Broad Cove, Newfoundland. (*Rev. A. Waghorne*.) Miquelon Island. (*Delàmare*.) In brooks, common; Bass River, N.B. (*Fowler's Cat.*) Shallow water, South West Point, Anticosti; on stones in brooks near Ottawa; very common in brooks and larger streams, North Hastings, Ont.; quite common in small brooks along Peace River, near Dunvegan, lat. 56°; in brooks in Roger's Pass, Selkirk Mountains, and at Ward's Ferry, Kootanie River, B.C. (*Macoun*.) British

Columbia. (*Lyall.*) Abundant in a pond, Pond Mills, near London, and in McGillivray Township and in a sluggish stream along Lake Ontario, Ont. (*J. Dearness.*) Greenland; rare. (*Fl. Gr.*)

Var. **gigantea**, Sulliv. ; Canadian Musci, No. 228.

Blaketown, Newfoundland. (*Rev. A. Waghorne.*) Shallow streams, Tobique River, N.B. (*Hay.*) Tay, York Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) In a small stream near Tracadie, Prince Edward Island ; shallow brooks, Truro, N.S. ; small brooks, Hastings, Co., Ont. ; in brooks, Nepigon River, Ont. ; on stones in Eagle River below Griffin Lake, B.C. (*Macoun.*)

* **F. Kindbergii**, Ren. & Card. Coult. Bot. Gaz. XV., 58.

F. Kindbergii, Canadian Musci, No. 233.

On twigs and the bases of trees in a pond at Cedar Hill, and in ditches at Victoria; also at the base of Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*) Mountains south of Tulameen River, B.C., alt. 5,000 feet. (*Dawson.*) Salmon Arm, Shuswap Lake, B.C. (*Law.*)

(599.) **F. Neo-Mexicana**, Sulliv. & Lesq. ; Lesq. & James, Mosses of N. America, 269 ; Canadian Musci, No. 229.

On stones in brooks near Halifax, N.S. ; abundant in brooks at Hastings, Burrard Inlet, B.C. ; also in the mill-stream at Nanaimo, Vancouver Island. (*Macoun.*)

(600.) **F. Dalecarlica**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 270 ; Canadian Musci, No. 230.

F. squamosa, Drumm. Musc. Bor.-Am., No. 233.

Canaan Forks and Tay, N.B. (*J. Moser.*) Broad Cove near Green Harbor, and Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*) In a rivulet at Holland Landing (Ontario). (*Drummond.*) On stones in the brook at Pirate's Cove, Straits of Canso, N.S. ; abundant in Gull River, Victoria Co., Ont. ; in streams entering Lesser Slave Lake, Athabasca. (*Macoun.*) River Thames at Plover Mills, Ont. (*R. Elliott.*) In the River Thames, near London, Ont. (*J. Dearness.*) Greenland. (*Fl. Gr.*)

(601.) **F. biformis**, Sulliv. ; Lesq. & James, Mosses of N. America, 270.

In the brook flowing eastward through Eagle Pass and entering the Columbia below Revelstoke, B.C. (*Macoun.*)

- (602.) **F. Novæ-Angliæ**, Sulliv. ; Lesq. & James, Mosses of N. America, 270.

F. tenella, Ren. & Card. ; Canadian Musci, No. 432.

The mill-brook near Green Harbor, Newfoundland. (*Rev. A. Waghorne.*) On stones in brooks at Yarmouth, N.S. ; in brooks north of Edmonton, N.W.T. ; abundant and fruiting freely on the bases of growing trees along the "Narrows" at Sicamous, B.C. ; also on trees at the mouth of the first creek, Deer Park, Lower Arrow Lake, B.C. (*Macoun.*)

- (603.) **F. disticha**, Hook. & Wils. ; Lesq. & James, Mosses of N. America, 272.

F. Lescurii, Canadian Musci, No. 231.

In brooks along Lake Nepigon, Ont. ; in pools, Peace River, lat. 56° ; Telegraph Trail, near Blackwater River, B.C. ; also at Victoria, Vancouver Island. (*Macoun.*)

- (604.) **F. hypnoides**, Hartm. ; Lesq. & James, Mosses of N. America, 272 ; Canadian Musci, No. 232.

On stones in a small woodland brook near Belleville, Ont. ; in Thunder Creek, west of Moose Jaw, Assiniboia ; on stones in brooks Manitoba House, Lake Manitoba ; on stones in Red Deer River, near the Hand Hills, Alberta ; in a small brook at Revelstoke, B.C. (*Macoun.*) Saskatchewan. (*Bourgeau.*)

- (605.) **F. squamosa**, Linn.

Miquelon Island. (*Delàmare.*)

91. DICHELYMA, Myrin.

- (606.) **D. obtusulum**, Kindb. (n. sp.)

D. Novæ-Brunsviciæ, Canadian Musci, No. 534.

Tufts dusky-green or olivaceous. Stems flaccid, subpinnae ; branches short. Leaves falcate, from the broader sub-oblong base gradually narrowed to the sublinear-lanceolate, obtuse or rarely sub-acute acumen, carinate, denticulate to or below the middle, sub-decurrent ; upper cells oblong-lanceolate, the other narrower, sub-linear, the basal rufescent but otherwise scarcely distinct, the alar longer and narrower ; costa vanishing below the apex. Perigonal leaves nerveless, ovate-oblong, acute. Perichetial leaves lanceolate, obtusate and

convolute. Capsule sub-cylindric, shortly emerging from the side of the perichetium. Dioecious.

This species has the habit of *Dichelyma falcatum*; and is the *D. falcatum* of Prof. Fowler's New Brunswick list.

Collected in still water, Bass River, N.B. (*Fowler's Cat.*)

- (607.) **D. uncinatum**, Mitt.; Lesq. & James, Mosses of N. America, 273; Canadian Musci, No. 234.

On twigs in ponds at McLeod's Lake, lat. 55°; also abundant on trees at the mouth of Pass Creek, near Sproat, B.C. (*Macoun.*)

- (608.) **D. capillaceum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 273; Canadian Musci, No. 431.

Fontinalis capillacea, Drumm. Musc. Bor.-Am., No. 234.

Grand Lake and Newcastle, N.B. (*Fowler's Cat.*) On sticks in brooks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On the roots of trees, bordering the rivulet at Holland Landing (Ontario). (*Drummond.*)

Var. **elongatum**, Kindb. (n. var.)

Stems more elongate, branches more distant, the leaf-base longer than the excurrent part of the costa.

In the bed of a small brook, 30 miles north of Michipicotin River, Lake Superior, July 27th, 1869. (*Macoun.*)

- (609.) **D. pallescens**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 274; Canadian Musci, No. 235.

Dead wood, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Abundant on the bases of trees in the inundated woods at the mouth of the Gatineau, near Hull, Que.; also on twigs in water-holes near St. Patrick's Bridge, Ottawa. (*Macoun.*) On bases of trees, Bass River and Fredericton, N.B. (*Fowler's Cat.*) Tay, York Co., N.B. (*J. Moser.*)

- (610.) **D. cylindricarpum**, Aust.; Lesq. & James, Mosses of N. America, 274.

On damp rocks in the Coast Range above Yale, B.C., May 17th, 1875. (*Macoun.*) The specimens gathered here were the same as those sent to Austin by Mrs. Roy and labelled Cascade Mountains.

XX. NECKEREÆ.

92. LEPTODON, Mohr.

- (611.) **L. trichomitrium**, Mohr; Lesq. & James, Mosses of N. America, 278; Canadian Musci, No. 236.

Pterogonium trichomitrium, Drumm. Musc. Bor.-Am., No. 78.

Trunks of trees in upper Canada (Ontario); about Niagara Falls. (*Drummond.*) On trees in a swamp a little east of Belleville, Ont. (*Macoun.*)

- (612.) **L. nitidus**, Lindb. MS.; Lesq. & James, Mosses of N. America, 279.

On elm trees in a swamp (since cleared up) a little east of Belleville Ont., July 20th, 1864. (*Macoun.*)

93. ALSIA, Sulliv.

- (613.) **A. abietina**, Sulliv.; Lesq. & James, Mosses of N. America, 280.

A. Macounii, Kindb., Bull. Torr. Bot. Club. XVII., 275; Canadian Musci, No. 462.

On trees North-west Coast. (*Menzies.*) Vancouver Island. (*Lyall.*) On rocks, Fraser River above Yale, B.C.; on rocks, Salt Spring Island, Gulf of Georgia, B.C.; on trees at Michosen, near Victoria, Vancouver Island. (*Macoun.*) Alaska. (*Roth. Alask.*)

94. NECKERA, Hedw.

- (614.) **N. Menziesii**, Drumm.; Lesq. & James, Mosses of N. America, 282; Canadian Musci, No. 238; Drumm. Musc. Bor.-Am., No. 162.

On rocks amongst the Rocky Mountains, but without fruit. (*Drummond.*) On rocks, below Hector, "Dry Cañon," discharge of Devil's Lake, and at Banff, Rocky Mountains; on rocks, Roger's Pass, Selkirk Mountains; on rocks at Sicamous, B.C.; abundant on trees at the mouth of Harrison River and at Harrison Hot Springs, B.C.; very common on trees and rocks, Victoria and Comox, Vancouver Island. (*Macoun.*) Alaska. (*Roth. Alask.*)

Var. **amblyclada**, Kindb. (n. var.); Canadian Musci, No. 567.

Neckera oligocarpa, Canadian Musci, No. 240, in part.

Differs in the densely pinnate stems, the branches obtuse, rarely attenuate and flagelliferous, the leaves shorter, sub-oblong. It agrees with the common form in the paraphylliferous stem, &c. Barren.

On rocks beside the torrent at Hector, Rocky Mountains, B.C., July 15th, 1885. (*Macoun.*)

(615.) **N. pennata**, Hedw.; Lesq. & James, Mosses of N. America, 282; Canadian Musci, No. 239; Drumm. Musc. Bor.-Am., No. 161.

Trunks of trees, abundant; rarely on rocks. (*Drummond.*) Common, Pictou Co., N.S. (*McKay.*) On trees; common, N.B. (*Fowler's Cat.*) Canaan Forks, Queen's Co., Tay, York Co. and Elmwood, King's Co., N.B. (*J. Moser.*) Trunks of trees, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On trees, Whycocogmah, Cape Breton; common on trees Prince Edward Island; also on trees at Campbellton, N.B.; in woods, Gaspé Co., Que.; abundant in elm and black ash swamps at Ottawa, Belleville, Leamington, Port Dover, Owen Sound and Niagara, Ont.; on trees, Nepigon River, Ont.; on trees along Lake Winnipegosis, Man. (*Macoun.*) Common on bark of trees, London, Ont. (*J. Dearness.*)

(616.) **N. oligocarpa**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 283; Canadian Musci, No. 240, in part.

On trees at Rustico Bay, Prince Edward Island; on trees at Ottawa, Ont.; on rocks at Nepigon, Lake Superior, June 24th, 1884; and on rocks, Kicking Horse Lake, Rocky Mountains; underneath overhanging rocks, Rocky Mountain Cañon, Peace River, lat. 56°. (*Macoun.*)

* **N. peterantha**, C. M. & Kindb. (n. subsp.)

Differs in the secondary stems being nearly simple, about 1 decim. long, rigid and more robust, the antheridia and archegonia very numerous, the capsule emergent, the leaves larger, and more crowded, the one branch of the costa prolonged, sometimes to the middle.

Common on rocks in the Kicking Horse Pass, three miles below Hector, Rocky Mountains, August 13th, 1890. (*Macoun.*)

(617.) **N. Douglasii**, Hook.; Lesq. & James, Mosses of N. America, 283; Canadian Musci, No. 241.

North-west Coast. (*Menzies.*) Alaska. (*Roth. Alask.*)

Var. **Macounii**, Kindb., Bull. Torr. Bot. Club, XVII., 275 ; Canadian Musci, No. 389.

Differing principally in the leaves being less attenuate and the capsule turgid-oval, completely exserted on the long pedicel (not "narrow half-exserted").

The true *N. Douglasii* has a narrower sub-cylindric capsule in specimens collected by Henderson (herb. *Kindberg*) ; but the capsule is also exserted ; probably the description in Lesq. & James is not correct.

Hanging in long festoons from the limbs of trees in shady woods at Hastings and Agassiz, B.C. ; and at Victoria, Nanaimo and Comox, Vancouver Island. (*Macoun.*)

(618.) **N. complanata**, Hueben. ; Lesq. & James, Mosses of N. America, 283.

On rocks, New Brunswick. (*Lesq. & James.*) Common, Pictou Co., N.S. (*McKay.*) New Harbor, Newfoundland ; and Little Bay Islands, Labrador. (*Rev. A. Waghorne.*)

95. HOMALIA, Brid.

(619.) **H. Macounii**, C. M. & Kindb. (n. sp.)

H. trichomanoides, Lesq. James, Mosses of N. America, 285 ; Canadian Musci, No. 242.

H. obtusata, Mitt. ; Lesq. & James, Mosses of N. America, 285 ; Canadian Musci, No. 243.

Hypnum trichomanoides, Drumm. Musc. Bor.-Am., No. 171.

Very nearly allied to *Hemalia trichomanoides* ; differs in the leaves being longer, rather lingulate, the lowest basal cells yellow, the perichetial leaves more suddenly narrowed to the very short acumen, the segments of the peristome cleft between the articulations.

The Asiatic *Homalia obtusata* (in herb. *C. Mueller*) is very different, probably not found in North America.

On rocks about Lake Superior ; but rare. (*Drummond.*) On trees at Pirate's Cove, Straits of Canso, N.S. ; on earth along Hunter's River, Prince Edward Island ; on the face of perpendicular rocks, Ste. Anne des Monts River, Gaspé Co., Que. ; on the bases of trees west of Ottawa, and on limestone rocks in McKay's woods, Ottawa ; on rocky ledges, Flinton, Hastings Co., and at Sudbury Junction and along the Dawson Route, west of Lake Superior, Ont. (*Macoun.*) On rocks, New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks along the Columbia River above

Revelstoke; and on logs on the overflowed banks of the Fraser at Mission, B.C.; on earth on the bank of the river at Comox, Vancouver Island. (*Macoun.*)

96. METEORIUM, Brid.

(620.) **M. nigrescens**, Mitt.; Lesq. & James, Mosses of N. America, 287.

Lake Huron; in fruit. (*Dr. Todd.*) Canada West. (*Emery.*)

XXI. LEUCODONTEÆ.

97. LEUCODON, Schwaegr.

(621.) **L. sciuroides**, Schwaegr; Lesq. & James, Mosses of N. America, 288; Canadian Musci, No. 237.

On the bark of trees, Bass River, N.B. (*Fowler's Cat.*) On trees, Queen's Co., N.B. (*J. Moser.*) On trees, Rustico Bay, Prince Edward Island; on trees along the Gaspé coast, Que.; common on trees at Ottawa, Belleville, Leamington, Owen Sound and throughout Ontario; fruiting very seldom. (*Macoun.*) On trees at Owen Sound, Ontario. (*Mrs. Roy.*) On bark of maples near London, Ont. (*J. Dearness.*)

(622.) **L. brachypus**, Brid.; Lesq. & James, Mosses of N. America, 288.

On trees along the Gaspé coast, Que.; high up on maple trunks at Owen Sound, Ont. (*Macoun.*) On trees near Pictou, N.S. (*McKay.*)

98. PTERICYNANDRUM, Hedw.

(623.) **P. filiforme**, Hedw.; Lesq. & James, Mosses of N. America, 289; Canadian Musci, No. 244.

Pterogonium filiforme, Drumm. Musc. Bor.-Am., No. 77.

Rocks on the Portage River, Rocky Mountains. (*Drummond.*) Bass River, Kent Co., N.B. (*Fowler's Cat.*) On rocks, Ste. Anne des Monts River, Gaspé Co., Que.; on flat limestone rocks along the Moira, above the railway bridge, at Belleville, Ont.; on rocks, three miles below Hector, Rocky Mountains; also on rocks in Roger's Pass, Selkirk Mountains; on rocks at Revelstoke, Deer Park and Pass Creek, Columbia River;

also at Eagle Pass and Sicamous in the Gold Range, B.C.; on rocks at Yale and Agassiz, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (624.) **P. papillosulum**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 553.

Differs from *Pterigynandrum filiforme* in the branch-leaves being acuminate and acute, denticulate nearly all around, less papillose; the branchlets are blunt and turgid, as in the variety *heteropterum* of this species.

On rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 4th, 1890. (*Macoun.*)

99. PTEROCONIUM, Swartz.

- (625.) **P. brachypterum**, Mitten; Lesq. & James, Mosses of N. America, 290.

British North America. (*Drummond.*) On old logs at the mouth of Sturgeon Creek, near Leamington, Ont. (*Macoun.*)

100. ANTITRICHIA, Brid.

- (626.) **A. curtispindula**, Brid.; Lesq. & James, Mosses of N. America, 291.

Lake Superior. (*Agassiz.*) Miquelon Island. (*Delàmare.*) Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*)

Var. **gigantea**, Sulliv. & Lesq.; Canadian Musci, No. 245.

Vancouver Island. (*Wood.*) British Columbia. (*Lyall.*) On trees at Revelstoke, Columbia River Valley; on rocks at Yale and on trees at Hastings, Burrard Inlet, B.C.; very common on trees at Victoria, Nanaimo and Comox, Vancouver Island. (*Macoun.*) Harbledown Island, Gulf of Georgia and on trees at Alert Bay, Vancouver Island. (*Dawson.*) Sitka. (*Roth. Alask.*) Ounalaska, Behring Sea and Kodiak Island, Alaska. 1891. (*J. M. Macoun.*)

- (627.) **A. tenella**, Kindb., Bull. Torr. Bot. Club. XVII. 275.

Tufts loose, green; secondary stems irregularly divided; branchlets numerous, the greater number very short. Leaves small, sub-patent or loosely appressed when dry, ovate-acute or short-acuminate, dentate at the apex, not striate, reflexed to the apex; the greater number of cells short, the inner and middle narrow; costa with 1-2 accessory

branches at the base, disappearing below the apex; perigonal leaves elongate. Dicecious. Female plants unknown.

Amongst *Racomitrium varium* (Can. Musc. No. 100) on rocks on the left bank of the Nanaimo River below the railway bridge, Vancouver Island, April 26th, 1887. (*Macoun.*)

(628.) **A. Californica**, Sulliv.; Lesq. & James, Mosses of N. America, 291. Canadian Musci, No. 246.

On rocks at Deer Park, Lower Arrow Lake, Columbia River; on rocks at Yale; on trees at the mouth of Harrison River and rocks at Agassiz, Fraser Valley, B.C.; on trees near Victoria and at Comox, Vancouver Island. (*Macoun.*) Alaska. (*Roth. Alask.*)

XXII. HOOKERIEÆ.

101. PTERYCOPHYLLUM, Brid.

(629.) **P. lucens**, Brid.; Lesq. & James, Mosses of N. America, 293; Canadian Musci, No. 247.

In water pools and borders of marshes in the springtime, along the Columbia River, above Revelstoke, also by pools in woods at Hastings, B.C.; wet places in woods around Comox, Vancouver Island. (*Macoun.*)

XXIII. FABRONIEÆ.

102. FABRONIA, Raddi.

(630.) **F. pusilla**, Raddi.; Lesq. & James, Mosses of N. America, 294; Canadian Musci No. 508.

Crevices of steep rocks over which water trickles in spring at Deer Park, Lower Arrow Lake, Columbia River, B.C., June 8th, 1890. (*Macoun.*)

XXIV. LESKEÆ.

103. THELIA, Sulliv.

(631.) **T. compacta**, Kindb., Ott. Nat. Vol. IV. 62.

T. hirtella, Canadian Musci, No. 248.

Stems closely creeping. Tufts green, very dense and thick. Branches erect, terete, obtuse and unilateral. Paraphyllia none. Leaves cochleariform, rotundate-obtuse and short-apiculate, very

scabrous at the back, with simple incurved papilliferous cilia; borders spinulose-dentate or fimbriate-ciliate; ciliae long, curved up and dentate; costa obsolete or very short. Perichetial leaves oblong-lanceolate, narrowly-acuminate, fimbriate. Capsule pale-brown, ovate-cylindrical; teeth subulate, short and broad, sometimes horizontally divaricate when moist, distantly articulate, dusky, the upper article cleft; basilar membrane short, scarcely $\frac{1}{4}$ the length of the teeth, without segments; operculum conic-obtuse, not curved, $\frac{1}{3}$ the length of the capsule; pedicel smooth, scarcely 1 cm. long. Differs from *Thelia hirtella* in the longer branches, the larger and more pellucid leaves, the greater leaf-cells and the longer and thicker capsule, also in the peristome.

Abundant on the stems of young maples in the central counties of Ontario. It forms wide rings around the tree about four feet from the ground and fruits abundantly. Vicinity of Belleville and in Seymour, Northumberland Co., Ont. (*Macoun.*) On trees at Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

(632.) **T. hirtella**, Sulliv.; Lesq. & James, Mosses of N. America, 299; Canadian Musci, No. 439.

Pterogonium hirtellum, Drumm. Musc. Bor.-Am., No. 79.

On trees, Upper Canada (Ontario.) (*Drummond.*) On the roots of trees in woods at Leamington, Ont. (*Macoun.*) On trees in woods at Collins Bay, near Kingston, Ont. (*Lawson.*)

(633.) **T. asprella**, Sulliv.; Lesq. & James, Mosses of N. America, 299.

On earth at the bases of trees at the south end of Pelee Point, Lake Erie, Ont. (*Macoun.*)

104. MYURELLA, Bruch & Schimp.

(634.) **M. julacea**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 300; Canadian Musci, No. 249.

Hypnum moniliforme, Drumm. Musc. Bor.-Am., No. 220.

Rocks and banks; but rare in fruit. (*Drummond.*) On ledges, Kakabeka Falls, west of Lake Superior. (*Mrs. E. G. Britton.*) On the bases of trees (fruiting) Gunn River, Anticosti; on the bases of trees Mount Albert, Gaspé Co., Que.; on old stumps in Dow's Swamp Ottawa; abundant and fruiting on the base of cedar stumps in swamps at Belleville, Ont.; on limestone rocks, Point Wilkins, Lake Winni-

pegoosis, Man. ; on rocks, House Mountain, near Lesser Slave Lake, N.W.T. ; in the "Dry Cañon," discharge of Devil's Lake, on rocks at Hector and along the Kicking Horse Pass to Mount Stephen, Rocky Mountains. (*Macoun.*) On damp rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Upemvik, Greenland. (*Fl. Gr.*) White Bay, Newfoundland ; Battle Harbor, Labrador. (*Rev. A. Waghorne.*)

(635.) **M. apiculata**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 300.

British America. (*Drummond* fide *Lesq. & James.*) Greenland. (*Fl. Gr.*)

(636.) **M. Careyana**, Sulliv. ; Lesq. & James, Mosses of N. America, 300 ; Canadian Musci, No. 250.

M. gracilis, (Weinm.) Lindb.

On rocks, St. John, N.B. (*Fowler's Cat.*) Crevices of rocks, Queen's Co., N.B. (*J. Moser.*) Crevices of rocks, Pirate's Cove, Straits of Canso, N.S. ; limestone rocks, Jupiter River, Anticosti ; on rocks, near Cape Rosier, at Madeline River and Ste. Anne des Monts River Gaspé Co., Que. ; on a limestone ledge west of Hull, Que. ; on limestone rocks along the Moira at Belleville, Ont. ; quite common on limestone rocks at Owen Sound, Ont. ; and in crevices of rocks, Red Rock, Lake Superior. (*Macoun.*) On ledges, Kakabeka Falls, west of Lake Superior. (*Mrs. E. G. Britton.*)

105. LESKEA, Hedw.

(637.) **L. polycarpa**, Ehrh. ; Lesq. & James, Mosses of N. America, 301 ; Canadian Musci, No. 251.

Hypnum medium, Drumm. Musc. Bor.-Am., No. 223.

About the roots of trees in swamps. (*Drummond.*) On trunks of trees subject to inundation ; Bass River, Newcastle, Grand Lake and Fredericton, N.B. (*Fowler's Cat.*) Roots of trees, Tobique River, and Lac Bean, St. Francis, N.B. (*Hay.*) Tay, York Co., N.B. (*J. Moser.*) Very abundant on the inundated flats at the mouth of the Gatineau near Ottawa ; on the bases of trees on the river flats two miles above the railway bridge at Trenton, Ont. ; on trees at Sudbury Junction, Ont. ; abundant on trees, Foster's Flats, below Niagara Falls ; on trees, Dawson Route west of Lake Superior ; on trees subject to inundation at Sicamous and Kamloops, B.C. (*Macoun.*)

(638.) **L. cyrtophylla**, Kindb. (n. sp.)

Tufts dense, dark green or brown, not shining. Stems irregularly branching, filiform, with few rhizoids. Leaves nearly uniform, very small, appressed when dry, open-erect when moist, concave, from a broad rotundate-ovate base short-acuminate, entire, faintly papillose, borders reflexed below; cells rotundate, sub-hyaline; costa indistinct or none. Diccious. Capsules not found.

The allied *Leskea* (*Pseudoleskea*) *catenulata* and *Leskea* (*Heterocladium*) *papillosa*, Lindb., both differ in the costate leaves.

On rocks on islands in Lake Nepigon, July 10th, 1884. (*Macoun.*)

(639.) **L. subobtusifolia**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 533.

Plants loosely tufted, yellowish green or fuscouscent. Stem sparingly radiculose irregularly divided, beset with paraphyllia; branches curved at apex. Leaves distant, decurrent, entire, distinctly papillose at base, loosely appressed when dry, very patent when moist, margins recurved at the base; stem-leaves broadly ovate, obtuse or subacute, branch-leaves oblong, obtuse; cells round, the alar quadrate; costa sub-percurrent. Capsule oblong, inclined, subcurvate; lid short, mammillate; calyptra narrow, cucullate; pedicel about 1 cm. long. Perichetial leaves large, short, ovate-lanceolate, short-acuminate, costate. Monocious. This species resembles *Leskea obscura*.

On trees subject to inundation at the mouth of Pass Creek, near Sproat, Columbia River, B.C. June 19th, 1890; also on trees at Nelson, Kootanie River, B.C. 1890. (*Macoun.*)

(640.) **L. nervosa**, Myrin; Lesq. & James, Mosses of N. America, 302; Canadian Musci, No. 252, in part.

Battle Harbor, Labrador. (*Rev. A. Waghorne.*) On trees at Fredericton, N.B. (*Fowler's Cat.*) On rocks at the mouth of Michaud River, Rimouski Co., Que. (*J. A. Allen.*) Tay, York Co., N.B. (*J. Moser.*) On trees, Grand Etang, Gaspé Co., Que.; also on Mount Albert, Gaspé, Que.; on trees at Ottawa, Belleville and Owen Sound, Ont.; and on trees on Gaulois Point, Lake Superior; on trees, Swan Lake House and Point Wilkins, Lake Winnipegosis, Man.; on rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains; on trees at Pass Creek near Sproat, B.C.; also on rocks at Yale, B.C. (*Macoun.*) On trees, Buffalo Lake, N.W.T. (*J. M. Macoun.*)

- (641.) **L. denticulata**, Sulliv.; Lesq. & James, Mosses of N. America, 302.

On trees at Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

- (642.) **L. pulvinata**, Wahl.; Lesq. & James, Mosses of N. America, 303; Canadian Musci, No. 253.

On trees along Peace River, at Hudson Hope, lat. 56°; also on trees by ponds at McLeod's Lake, B.C., lat. 55°. (*Macoun.*)

- (643.) **L. Wollei**, Aust.; Lesq. & James, Mosses of N. America, 304.

Niagara Falls. (*Wolle.*) On rocks east shore of Lake Superior. (*Macoun.*) This species belongs rather to the genus *Amblystegium*.

106. *LESCURÆA*, Schimp.

- (644.) **L. imperfecta**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 489.

Tufts loose, green, not shining. Stem pinnate, radicant; paraphyllia few. Stem-leaves smooth, decurrent, often bistriate, from a short-ovate base suddenly narrowed into a long subulate or filiform, often curved acumen, when dry loosely appressed with a patent acumen, distant and patent-open when moist; basal margins recurved; branch-leaves long-attenuate; inner cells near the costa oblong-sublinear, the marginal subquadrate, the other oval-oblong; costa vanishing in the base of the acumen. Perichetial leaves nerveless; cells sublinear. Capsule small, oblong, straight; lid conic, subobtuse; peristome double, teeth incurved, cilia short or none, basal membrane indistinct; pedicel smooth, fine, flexuous, about 6 mm. long. Dioecious. Allied to the European *Lescuræa striata*, (Schw.) Schimp. Bryol. Europ.

On both earth and bark at the bases of trees on both sides of the Columbia River at Revelstoke, B.C., May 19th, 1890. (*Macoun.*)

107. *ANOMODON*, Hook. & Tayl.

- (645.) **A. rostratus**, Schimp.; Lesq. & James, Mosses of N. America, 305; Canadian Musci, No. 254.

Hypnum rostratum, Drumm. Musc. Bor.-Am. No. 228.

About Beaver Lake, Upper Canada, &c. (*Drummond.*) Pictou Co., N.S. (*McKay.*) Fredericton, N.B. (*Fowler's Cat.*) On rocks, Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser.*) On

rocks along the Gaspé coast, Que.; very common on the bases of trees in swamps and on rocks throughout Ontario. Ottawa, Belleville, Leamington and Amherstburg, Detroit River; on rocks, Mount Benson, Vancouver Island. (*Macoun.*) On the bases of trees, Nixon's Pond, near London, Ont. (*J. Dearness.*)

- (646.) **A. attenuatus**, Hueben.; Lesq. & James, Mosses of N. America, 305; Canadian Musci, No. 255.

Hypnum attenuatum, Drumm. Musc. Bor.-Am., No. 226.

About the roots of trees in Upper Canada (Ontario.) (*Drummond.*) Common; Pictou Co., N.S. (*McKay.*) On roots of trees, Truro, N.S.; also Fredericton, N.B. (*Fowler's Cat.*) Bases of old trees and stumps, Canaan Forks, N.B. (*J. Moser.*) Bases of trees, Tobique River, N.B. (*Hay.*) On the bases of trees, Whycocogmah, Cape Breton; on old logs and the bases of trees in swamps, common in Quebec and Ontario; Ste. Anne des Monts River, Gaspé, Que.; Ottawa, Belleville, Lake Nipissing, Lake Nepigon, Wooler, Leamington and Owen Sound, Ont.; on the bases of trees at Sicamous, B.C., 1889. (*Macoun.*) Roots of trees, River Rouge, Argenteuil, Co., Que. (*D'Urban.*) On the bases of trees at London, Ont. (*J. Dearness.*)

- (647.) **A. obtusifolius**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 305; Canadian Musci, No. 256.

A. viticulosum, Drumm. Musc. Bor.-Am., No. 163.

Tay, York Co., N.B. (*J. Moser.*) Abundant on the bases of trees in damp woods at Ottawa and westward through Ontario to Belleville, Wooler and Owen Sound. (*Macoun.*) Trunks of trees, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On *Ostrya* in woods at London, Ont. (*J. Dearness.*) Trunks of trees in Upper Canada (Ontario) and about Niagara Falls. (*Drummond.*)

- (648.) **A. apiculatus**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 306; Canadian Musci, No. 257.

On decayed logs, but chiefly on limestone rocks in woods at Ottawa; on rocks at Shannonville, Hastings Co.; on old logs, Kennebec, Addington Co.; and on limestone rocks, Owen Sound, Ont. (*Macoun.*)

- (649.) **A. viticulosus**, Hook. & Tayl.; Lesq. & James, Mosses of N. America, 306; Canadian Musci, No. 258.

Shaded rocks; Niagara Falls, sterile. (*Lesq. & James.*) Owen Sound, Ont.; fertile. (*Mrs. Roy.*) Common on limestone ledges

west and north of Hull, Que.; also in McKay's woods at Ottawa; very abundant on limestone ledges all around Owen Sound, Ont. (*Macoun.*)

(650.) **A. heteroldeus**, Kindb. (n. sp.)

Leskea nigrescens, Kindb. Bull. Torr. Bot. Club, XVI, 97; Canadian Musci, No. 395 and No. 252, in part.

L. nervosa var. *flagellifera*, Kindb. Ott. Nat. Vol. IV. 62.

Plants densely tufted, green, finally fuscous or blackish. Stem creeping, subpinnate, much branching and furnished with numerous small, flagelliform branchlets, densely beset with very small, oblong, obtuse and nerveless leaves; paraphyllia broad. Stem-leaves subdistant, decurrent, appressed when dry, open-erect when moist, from a broadly ovate base suddenly narrowed to a long, subulate or sublinear acumen, entire, faintly papillose; margins revolute at the base; branch-leaves more attenuate; cells round-oval, the marginal of the base quadrate; costa vanishing below the acumen. Diccious. Fruiting specimens not found. This species resembles *Leskea nervosa* in habit.

On flat limestone rocks and on the roots of trees in McKay's woods, Ottawa; also on flat limestone rocks in maple woods at Owen Sound, Ont.; on rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains. (*Macoun.*)

108. PLATYCYRIUM, Bruch & Schimp.

(651.) **P. repens**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 307.

P. repens var. *orthocladon*, Kindb.; Canadian Musci, No. 259, in part.

Neckera sericea, Drumm. Musc. Bor.-Am., No. 159.

Pterogonium intricatum, Drumm. Musc. Bor.-Am., No. 75.

Baie St. Paul, Charlevoix Co., Que. (*St. Cyr.*) Common on rotten wood at London, Ont. (*J. Dearness.*) On dead wood, Tobique River, N.B. (*Hay.*) Tay, York Co., N.B. (*J. Moser.*) On old logs, Skead's Farm, Ottawa; and on trees at Peace River, lat. 56°, N.W.T. (*Macoun.*) Rocks amongst the Rocky Mountains; at Portage River; Beaver Lake and in Upper Canada (Ontario) upon trunks of trees and stones. (*Drummond.*)

Var. **orthocladon**, Kindb. (n. sp?); Canadian Musci, No. 259, in part.

Branches elongate and not curved. All basal leaf-cells orange. Segments linear, not completely free at base, smooth or denticulate at one side, not shorter than the teeth.

The European species differs in the peristomial teeth being pale,

generally longer than the linear-subuliform, hyaline-bordered and free segments; the branches of the stem are shorter and curved, only the alar leaf-cells orange. The figure given by Schimper and Lesq. & James representing the peristome does not correspond with the specimens.

On old logs, Skead's Farm, near Ottawa, May 15th, 1885. (*Macoun.*)

109. PYLAISIA, Bruch & Schimp.

- (652.) **P. polyantha**, Bruch & Schimp.; Lesq. & James. Mosses of N. America, 308; Canadian Musci, No. 260.

Hypnum polyanthos, Drumm. Musc. Bor.-Am., No. 222.

Trunks of trees, stones and logs in woods. (*Drummond.*) On trees, Bass River, N.B. (*Fowler's Cat.*) On trees, Tobique River, N.B. (*Hay.*) On the bases of trees at Canaan Forks and Tay, N.B. (*J. Moser.*) On trees, Rustico Bay, Prince Edward Island; also on logs at Campbellton, N.B.; on trees along the Gaspé Coast, Que.; on rotten logs at Ottawa and Belleville, and on trees at Lake Nepigon, Ont.; on stumps and poplar trees in woods at Sydenham Falls, Owen Sound, Ont.; on the bases of aspen poplar trees throughout the prairie region and northward to Peace River; on stumps at Morley and on stones at Banff, Rocky Mountains. (*Macoun.*) On trees along the Clearwater River, N.W.T. (*J. M. Macoun.*) Saskatchewan and Rocky Mountains. (*Bourgeau.*) Near London, Ont. (*J. Dearness.*)

- (653.) **P. heteromalla**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 308; Canadian Musci, No. 261.

On trees along Niagara River at the Whirlpool; on trees, abundant at Edmonton and Lesser Slave Lake, also in the Peace River district and at Yale, B.C., 1875. (*Macoun.*) On trees along the Clearwater River, N.W.T., lat. 57°. (*J. M. Macoun.*) Trunks of trees and stones in various situations; Rocky Mountains. (*Drummond* No. 222.)

- (654.) **P. pseudo-platygyrium**, Kindb. (n. sp.)

Tufts intricate; stems irregularly divided or subpinnate; branches thick. Leaves crowded, the upper glossy-green, the other finally brown, from the ovate-oblong base long-acuminate with a sub-filiform, often curved, distinctly denticulate acumen; borders recurved to the acumen; cells narrow and confluent, except the quadrate alar ones; costa double, distinct. Perichetial leaves serrulate, abruptly narrowed to the long, hairpoint-like acumen. Capsule straight, suberect, cylindric

and wide-mouthed; segments free, longer than the teeth; lid conic, short-apiculate; pedicel 1.5 cm. long. Monœcious.

This species resembles *Platygyrium repens* (or rather some forms of *Hypnum cupressiforme*), but it differs in the monœcious inflorescence and the denticulate leaves.

It agrees with *Pylaisia Selwynii* in the recurved leaf-borders, differs in the narrower leaves and the narrow capsule. It differs also from *Pylaisia subdenticulata* in the larger and more crowded leaves and larger capsule; from *Hypnum reptile* in the peristome, the basal cells not being yellow, &c.

On decayed trunks near Nepigon House, Lake Nepigon, July 17th, 1884. (*Macoun.*)

(655.) **P. Selwynii**, Kindb., Ott. Nat. II., 156; Canadian Musci, No. 434.

Differs from *P. intricata* in the denser, darker green tufts, the leaves broader, short-acuminate, reflexed to the acumen at one border or at both, the short alar and marginal cells more numerous, the capsule short-oval, the segments adhering to two-thirds of the teeth.

Very abundant on old cedar fences along the Richmond Road, three miles west of Ottawa, Oct. 12th, 1885. (*Macoun.*)

(656.) **P. Ontariensis**, C. M. & Kindb. (n. sp.)

P. intricata, Canadian Musci, No. 262, in part.

Agrees with *Pylaisia intricata* in the leaves being ovate-lanceolate-subulate-acuminate, subentire, with numerous and quadrate alar cells, the oblong-ovate capsule, the segments adhering to and bordering the lower half of the teeth, split above and cohering at the apex; differs in the branchlets being distant, not crowded, the leaves broader, shorter, acuminate with more dilated cells, the lid of the capsule obtuse, not rostellate, peristomial teeth broader, spores smaller.

On earth at the bases of trees, Ste. Anne des Monts River, Gaspé Co., Que., August 24th, 1882; also along Lake Nepigon. 1884. (*Macoun.*)

(657.) **P. filari-acuminata**, C. M. & Kindb. (n. sp.)

Agrees with *Pylaisia velutina* in the leaves being filiform-acuminate, but the acumen is distinctly denticulate, often twisted, the alar cells more numerous, the capsule thicker, oblong, the peristomial teeth nearly free from the segments. Lid not found.

On logs subject to inundation west side of the Columbia River at Revelstoke, B.C., May 3rd, 1890. (*Macoun.*)

- (658.) **P. intricata**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 309; Canadian Musci, No. 262, in part.

Pictou Co., N.S. (*McKay*.) On trees at Fredericton, N.B. (*Fowler's Cat.*) On bases of trees, Tobique River, N.B. (*Hay*.) Decaying logs, Ste. Anne des Monts River and Grand Etang, Gaspé Co., Que.; common on trees around Ottawa; on trees at Belleville and Sudbury Junction, Ont.; common on trees at Port Dover, Lake Erie and Owen Sound, Ont.; on trees, Moose Mountain, Assiniboia; also at Lake Nepigon. (*Macoun*.) Common at London, Ont. (*J. Dearness*.)

- (659.) **P. velutina**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 309; Canadian Musci, No. 470.

Heart's Delight, Newfoundland. (*Rev. A. Waghorne*.) On trees at Bass River, N.B. (*Fowler's Cat.*) On earth at the base of a tree, Mount Albert, Gaspé Co., Que.; on old logs, Dow's swamp, Ottawa; on old logs, Port Dover, Lake Erie, Ont.; on trees in the Kaministiquia Valley, Fort William, Lake Superior. (*Macoun*.)

110. HOMALOTHECIUM, Bruch & Schimp.

- (660.) **H. pseudo-sericeum**, Lesq. & James, Mosses of N. America, 310; Canadian Musci, No. 435.

Abundant on rocks at Yale, B.C. (*Macoun*.)

- (661.) **H. corticola**, Kindb. Bull. Torr. Bot. Club, XVII., 277.

On rocks at Cedar Hill and Mount Tolmie, near Victoria, Vancouver Island, May 16th, 1887. (*Macoun*.)

- (662.) **H. sericeoides**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 496.

Nearly allied to *Homalothecium sericeum*, differing in the more densely crowded, not decurrent, narrower and heteromorphous branch-leaves; some are long-acuminate, subentire, less reflexed at the margins; others are short-acuminate, strongly reflexed at the margins to the serrulate acumen. Capsules and pedicels unknown.

Crevices of granite rocks a little above Revelstoke, B.C., May 7th, 1890. (*Macoun*.)

(663.) **H. sericeum**, (Linn.) Bryol. Europ. ; Canadian Musci, No. 549.

Hypnum sericeum, Drumm. Musc. Bor.-Am., No. 169.

Stem pinnate, creeping. Branch-leaves narrow, ovate-lanceolate, short-decurrent, long-subulate or filiform-acuminate, plicate, faintly denticulate nearly all around or subentire ; margins scarcely reflexed ; cells narrow, the alar quadrate ; costa long, vanishing in the base of the acumen. Perichetial leaves scarcely plicate, attenuate to a filiform point. Capsule erect, sub-cylindric, straight or slightly curved ; teeth pale, segments short, basilar membrane high, to one-third of the segments ; cilia none ; annulus broad ; pedicel rough, 1-2 cm. long. Dioecious.

On the bark of trees at Michosen, 16 miles from Victoria, Vancouver Island, April 16th, 1887 ; very abundant on rocks at Banff and in the "Dry Cañon" at Devil's Lake, Rocky Mountains. (*Macoun.*) Rocks among the Rocky Mountains. (*Drummond.*)

III. ENTODON, C. Mueller.

(664.) **E. acicularis**, C. M. & Kindb. (n. sp.)

Tufts compact, brown-yellow or variegate with green. Stem much divided, very radiculose ; branches very short and turgid, not attenuate. Leaves imbricate, with difficulty loosed from the stem, scarcely open when moist, finally golden-yellow, from the ovate-oblong base suddenly narrowed to a fine aciculiform or subulate point, denticulate nearly all around ; cells not chlorophyllose, linear-lanceolate or fusiform, the alar not well defined ; costa generally wanting. Barren.

On rocks in McKay's woods, near the lake, at Ottawa, May 2nd, 1885 ; also by an old lime-kiln at Britannia, six miles west of Ottawa, October, 1890. (*Macoun.*)

(665.) **E. cladorrhizans**, (Hedw.) C. Muell.

Neckera cladorrhizans, Drumm. Musc. Bor.-Am., No. 160, in part.

Cylindrothecium cladorrhizans, Schimp. ; Lesq. & James, Mosses of N. America, 311 ; Canadian Musci, No. 263.

Entodon (*Cylindrothecium*) *cladorrhizans* Hedw., differing from the European *E. Schleicheri* (Schimp.) in the broad annulus of the capsule which is very imperfectly described by Lesq. & James (page 311.) It merits therefore a more complete description of the plant.

Tufts dense but loosely cohering. Stem pinnate ; branchlets alternate. Leaves ovate-oblong, obtusate with a very short, often recurved point, subentire or slightly denticulate above, often faintly striate ;

margins recurved at the angles; cells not distinctly chlorophyllose, narrow, fusiform-lanceolate or sub-linear, also the inner basal; alar cells numerous, well-defined and quadrate; costa none or short and double. Perichetial leaves long subulate-acuminate, faintly denticulate at the acumen. Monœcious.

On logs, Tay, York Co., N.B. (*J. Moser.*) On old logs in McKay's woods at Ottawa; very abundant on old logs at Carleton Place, 30 miles west of Ottawa; on stones at Britannia, six miles west of Ottawa; common on old logs at Belleville, Leamington and Owen Sound, Ont. (*Macoun.*) Trunks of trees, Upper Canada (Ontario). (*Drummond.*) Common on old logs at London, Ont. (*J. Dearness*)

(667.) **E. Macounii**, C. M. & Kindb. (n. sp.)

Cylindrothecium Drummondii, Canadian Musci, No. 436.

Tufts loose. Stem sparingly divided, translucent (visible, in a dry state, through the leaves); branches much compressed, elongate, not attenuate, shining green above. Leaves patent, concave, short, ovate-lanceolate, attenuate to a short subulate point; basal angles rounded; margins scarcely recurved below, faintly denticulate all around; cells faintly chlorophyllose, long-sublinear, the lowest basal dilated, oblong or the alar often subquadrate; costa none or very short and double. Perichetial leaves small, convolute or connivent, longer acuminate, more distinctly denticulate at the apex. Dioecious.

The species is quite distinct; *Entodon Drummondii* differs in the leaves being obtusate, nearly entire, &c.

On earth in the "Big Swamp," Murray, Northumberland Co., Ont., October 7th, 1888. (*Macoun.*)

(668.) **E. (Raphidostegium ?) expallens**, C. M. & Kindb. (n. sp.)

Tufts loose, pale yellow. Stems sparingly divided, radiculose at the base. Branches elongate, much compressed, not attenuate. Leaves sub-distichous, patent, short ovate-lanceolate, acute, concave, nearly entire, denticulate only at the apex, distinctly auriculate, not recurved at the margins; cells not chlorophyllose, long-sublinear, the inner basal dilated sub-oblong; auricles excavate, well-defined with large, oval or roundish, finally golden-yellow cells; costa none or double, sometimes reaching to the middle. Barren.

This species could perhaps be related to the genus *Raphidostegium*, but the leaves are not recurved at the margins; the plant is more robust and resembles *Entodon Macounii* in habit.

In boggy soil in wet woods at Stephen, summit of Rocky Mountains, July 23rd, 1885. (*Macoun.*)

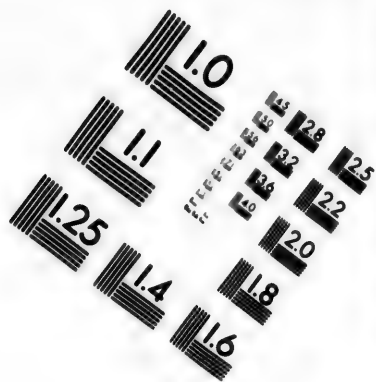
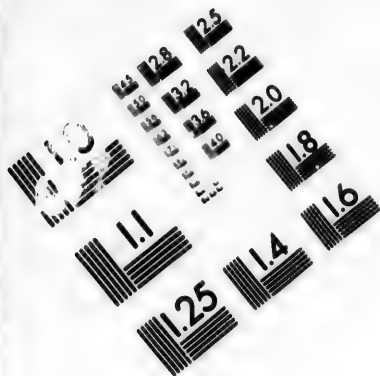
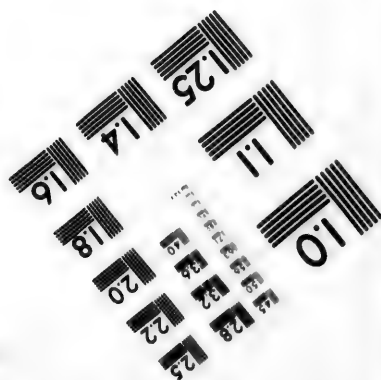
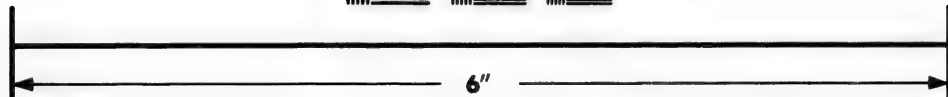
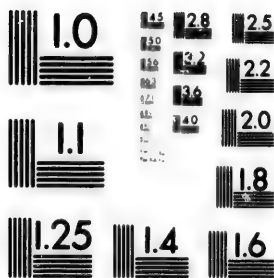


IMAGE EVALUATION TEST TARGET (MT-3)



Photographic
Sciences
Corporation

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

18 20 22 25
28 32 36 39

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

(669.) **E. seductrix**, (Hedw.) C. Muell.

Cylindrothecium seductrix, Sulliv. ; Lesq. & James, Mosses of N. America, 311.

Neckera cladorhizans, Drumm. Musc. Bor.-Am., No. 160, in part.

On rotten logs, in woods, at Sudbury Junction, Ont. ; on old logs at the mouth of Sturgeon Creek, Leamington, Lake Erie, Ont. (*Macoun.*)
On trunks of trees, Upper Canada (Ontario). (*Drummond.*)

(670.) **E. brevisetum**, (Hook. & Wils.)

Cylindrothecium brevisetum, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 312.

On old logs and rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*)
Doubtful specimens from New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

(671.) **E. compressum**, (Hedw.) C. Muell.

Cylindrothecium compressum, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 311.

On roots of trees on James Terrill's Farm close to Cold Creek, Brighton, Northumberland Co., Ont. (*Macoun.*)

112. CLIMACIUM, Web. & Mohr.(672.) **C. dendroides**, Web. & Mohr ; Lesq. & James, Mosses of N. America, 314 ; Canadian Musci, No. 264 ; Drumm. Musc. Bor.-Am., No. 230.

About Beaver Lake and the Columbia River. (*Drummond.*) White Bay, Newfoundland. (*Rev. A. Waghorne.*) Miquelon Island. (*Delamare.*) Island of Orleans, Que. (*St. Cyr.*) On the ground in dense shade, Molus River, N.B. (*Fowler's Cat.*) On earth, Brackley Point, Prince Edward Island ; on rocks along Gull River, Victoria Co., Ont. ; also in wet woods west of Hull, Que. ; on rocks along the shore of Lake Huron and Lake Nepigon, Ont. ; in damp woods at Revelstoke, Columbia River, also at Agassiz, Hastings and Quesnel, B.C. (*Macoun.*) Salmon Arm, Shuswap Lake, B.C. (*Law.*) Not rare in Greenland. (*Fl. Gr.*)

(673.) **C. Americanum**, Brid. ; Lesq. & James, Mosses of N. America, 314 ; Canadian Musci, No. 265 ; Drumm. Musc. Bor.-Am., No. 231.

Upper Canada (Ontario). (*Drummond.*) Pictou Co., N.S. (*McKay.*)
Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*) Wet places, Baas

River, N.B. (*Fowler's Cat.*) In boggy woods, Canaan Forks, N.B. (*J. Moser.*) Shaded places, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On earth in swamps at Ottawa, common; along the River Ste. Anne des Monts, Gaspé Co., Que.; abundant in swamps at Belleville and Leamington, Ont.; in swamps at Banff, Rocky Mountains. (*Macoun.*) Fine and common at London, Ont. (*J. Dearness.*)

(674.) **C. Ruthenicum**, (Weinm.) Lindb.; Lesq. & James, Mosses of N. America, 314.

Sitka. (*Bischoff.*) At Sitka, Alaska and on Attu Island, Behring Sea, 1891. (*J. M. Macoun.*)

113. ORTHOTHECIUM, Bruch & Schimp.

(675.) **O. rufescens**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 315.

Wet rocks, Davis Strait. (*Taylor fide Lesq. & James.*)

(676.) **O. rubellum**, (Mitt.) Kindb.; Lesq. & James, Mosses of N. America, 315.

Davis Straits. (*Taylor.*) Rocky Mountains, intermixed with *Catoscopium nigrum*. (*Drummond fide Mitten.*)

(677.) **O. intricatum**, Hartm.

On rocks around Kicking Horse Lake, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

(678.) **O. chryseum**, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 316; Canadian Musci, No. 266.

Hypnum rufescens, Drumm. Musc. Bor.-Am., No. 221.

Moist rocks amongst the rocky Mountains. (*Drummond.*) Rocky Mountains. (*Bourgeau.*) Beechey Island, Wellington Channel and Pond's Bay, Arctic America. (*Mitten.*) In boggy places and on wet rocks at Hector, Banff, Lake Louise, and "Dry Cañon," discharge of Devil's Lake, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

XXV. HYPNÆ.

114. *PSEUDOLESKEA*, Bruch & Schimp.

(679.) *P. atrovirens*, Dicks.; Lesq. & James, Mosses of N. America, 319; Canadian Musci, No. 437.

Cape Chudleigh, Hudson Strait. (*R. Bell.*) On rocks at Niagara Falls and Lake Superior; on damp rocks three miles below Hector, Rocky Mountains; on damp rocks, Roger's Pass, Selkirk Mountains; on rocks, mountains north of Griffin Lake, B.C., alt. 6,700 feet; also on rocks at Yale, B.C. (*Macoun.*) On rocks, Lake Huron. (*Mrs. Roy.*) Greenland. (*Fl. Gr.*)

Var. *atricha*, Kindb. (n. var.)

Differs principally in the tufts being very dense and soft-fuscescent with green tips, stem very lax, nearly without paraphyllia and rhizoids.

On rocks along the Eagle River, just below the bridge at Griffin Lake, B.C., August 13th, 1889. (*Macoun.*)

(680.) *P. oligoclada*, Kindb. Bull. Torr. Bot. Club, XVII., 277.

Allied to *Pseudoleskea atrovirens*, but very different in smaller leaf-cells. Tufts loose, dark brown, sparingly radiculose. Secondary stems sparingly branched; branchlets distant, short and julaceous, paraphyllia numerous. Leaves crowded, not decurrent, appressed when dry, falcate when moist, reflexed on the borders generally to the middle, abruptly attenuate from the short ovate base to the longer, sub-entire acumen, not striate; cells very small, faintly papillose, not confluent, short with incrassate walls, rotundate or quadrate, only the upper-most narrow; costa brown, stout, vanishing into the acumen; perichetial leaves longer, acuminate, scarcely reflexed on the borders; cells narrower; archegonia 10-12, paraphyses few, shorter. Diœcious. Capsules and male plants unknown.

On damp rocks, Mount Benson, Nanaimo, Vancouver Island, June 8th, 1887. (*Macoun.*)

M. Cardot believes that this plant is a variety of *Pseudoleskea atrovirens*.

(681.) *P. sciuroides*, Kindb. Bull. Torr. Bot. Club, XVII., 276.

Macounia sciuroides, Kindb. enumer. bryin. exot., 1888.

Plants loosely cohering. Stems sparingly branching, more or less radicant; paraphyllia numerous; branches pale-green, curved above.

Leaves crowded, sub-entire, not, or indistinctly, papillose, not decurrent, from the ovate base narrowed into a shorter, subulate or piliform acumen, falcate also in a dry state, more or less plicate, revolute nearly all around, margins broader below; cells hyaline, only the lowest basal yellow, all thin-walled, the inner and upper oblong or lanceolate, the other subquadrate; costa stout, finally yellowish, vanishing in or below the acumen. Perichetial leaves from the base more attenuate, denticulate at the acumen, nerveless or indistinctly costate. Capsule oblong, sub-erect or inclined, not striate; peristome orange-colored; teeth densely articulate without distinct longitudinal lines, subulate, hyaline-bordered, when dry incurved; segments scarcely shorter or narrower, in the middle pertuse; basilar membrane very short; cilia smooth; pedicel 1.5 cm. long; spores large, 0.02 mm. Lid and calyptra unknown. Dioecious.

On rocks in the valley of Elk River, Rocky Mountains, 1883. (Dawson.)

Var. **denudata**, Kindb. (n. var.); Canadian Musci, No. 564.

Stems more rigid, about 10 cm. long, nearly simple, curved only at apex, naked below and not radicant. Barren.

This variety differs very much in its habit; it is possible, that the capsule, not hitherto found, also is different so as to form a new species.

On rocks along the Asulcan Creek near the glacier of that name, Selkirk Mountains, B.C., alt. 6,000 feet, August 7th, 1890. (Macoun.)

(682.) **P. stenophylla**, Ren. & Card. Coult. Bot. Gaz.; Canadian Musci, No. 580.

Quite common on stems of alder and on stones on damp mountain slopes in Roger's Pass, Selkirk Mountains, August 5th, 1890. (Macoun.)

(683.) **P. radicata**, Mitt.; Lesq. & James, Mosses of N. America, 320.

Hypnum tenax, Drumm. Musc. Bor.-Am., No. 225, in part.

Banks of Portage River, Rocky Mountains. (Drummond.)

(684.) **P. rigescens**, Lindb. Act. Soc. Fenn. X. 247.

P. radicata, var. *gracilis*, Lesq. & James, Mosses of N. America, 320.

Hypnum tenax, Drumm. Musc. Bor.-Am., No. 225, in part.

Banks of Portage River, Rocky Mountains. (Drummond.)

- (685.) ***P. falcicuspis***, C. M. & Kindb. (n. sp.); Canadian Musci, No. 510.

Plants densely tufted. Stems much branching. Leaves very papillose, denticulate above, short, ovate-lanceolate, attenuate to an acute or filiform, often curved, point, long-decurrent; margins recurved to or above the middle, not in the upper part; cells rotundate, at the angles quadrate; costa vanishing far below the acumen. Dioecious.

Differs from *Pseudoleskea atrovirens* principally in the long-decurrent, very distinctly papillose and more denticulate leaves.

On rocks, west side of Lake Mara, Sicamous, B.C., July 3rd, 1889; on rocks at the Illicillewaet Cañon, near Revelstoke, also at Quesnel, B.C. (Macoun.)

- (686.) ***P. malacoclada***, C. M. & Kindb. (n. sp.)

P. catenulata, Canadian Musci, No. 460.

Plants densely tufted. Stems not rigid, much branching, sparingly radicant without paraphyllia; branches green or finally fuscous. Leaves crowded, entire, not decurrent, not distinctly papillose; the stem-leaves from a concave, broadly ovate or rotundate base suddenly narrowed to the subulate or filiform, recurved acumen; branch-leaves more attenuate to the subulate and patent point; basal margins recurved; cells rotundate, the alar quadrate; costa very short and double or none. Perichetial leaves closely connivent with a patent or curved acumen; cells sublinear-lanceolate. Dioecious.

This species resembles *Leskea nervosa* in habit, but is very different in its nerveless leaves; it is rather allied to the European *Pseudoleskea catenulata*, but is more robust.

On dry rocks in the ravine west of Murray's Rancho, Spence's Bridge, B.C., May 25th, 1889. (Macoun.)

115. HETEROCLADIUM, Bruch & Schimp.

- (687.) ***H. dimorphum***, Brid.; Lesq. & James, Mosses of N. America, 321.

Nova Scotia. (James.) On rocks, Canaan Forks, Queen's Co., and at Tay, York Co., N.B. (J. Moser.) Greenland. (Fl. Gr.)

- (688.) ***H. heteropterum***, Bruch.; Canadian Musci, No. 267.

Hyprum catenulatum, Drumm. Musc. Bor.-Am., No. 219.

On damp rocks at Hastings, Burrard Inlet, B.C.; damp rocks, Goldstream and Nanaimo, Vancouver Island. (Macoun.) Forward Inlet,

Gulf of Georgia, B.C. (*Dawson*.) Greenland. (*Fl. Gr.*) Upon rocks, rare; not found in fructification. (*Drummond*.)

(689.) **H. Vancouveriense**, Kindb.

Thuidium Vancouveriense, Kindb., Bull. Torr. Bot. Club, XVII, 277.

Plants minute, densely and irregularly pinnate, sparingly radiculose, rarely flagelliferous, dark green, not glossy; branches short, very slender. Leaves ovate-deltoid, denticulate above the middle, pellucid, faintly papillose; stem-leaves decurrent, reflexed at the base, acute; branch-leaves smaller, looser, more concave, oval and obtuse; cells hexagonal-oval or rhombic, the alar and marginal quadrate-rhombic; costa slender, short, scarcely reaching to the middle; paraphyllia few or none. Perichetial leaves longer acuminate, cells narrower. Capsule small, oblong, sub-erect; peristome perfect; teeth yellowish; cilia 2; elongate; pedicel 1 cm. long. Dioecious.

On rocks on the upper slopes of Mount Finlayson, at Goldstream; also on Mount Arrowsmith, Vancouver Island, July 17th, 1887. (*Macoun*.)

(690.) **H. procurrens**, Lesq. & James, Mosses of N. America, 321; Canadian Musci, No. 498.

British North America. (*Drummond* fide *Mitten*.) On damp rocks, Roger's Pass, Selkirk Mountains, B.C., alt. 4,500 feet; on rocks near Hector, Rocky Mountains. (*Macoun*.)

(691.) **H. frullaniopsis**, C. M. & Kindb. (n. sp.)

Stem irregularly divided, brown-red, not radiculose; branches short, obtuse, when dry incurved; paraphyllia none. Leaves uniform, dark green, not shining, when dry loosely, or not at all, appressed, subsquarrose when moist, distant and decurrent, cochleariform, roundish oval, obtusate, incurved at the apex, minutely denticulate above to the middle, very papillose; upper cells rhombic, the lower oblong, the alar quadrate, the inner basal reddish; costa short, more or less distinct sometimes stout and simple. Dioecious. Habit of the hepatic, *Frullania*.

This species differs very much from the allied species principally in the uniform leaves, the absence of paraphyllia and the not cordate leaf-base.

On trees, at Canaan Forks, Queen's Co., N.B. (*J. Moser*.)

(692.) **H. aberrans**, Ren. & Card. Coult. Bot. Gaz.

H. homoeopterum, C. M. & Kindb.; Canadian Musci, No. 484.

Abundant on rocks and bark of trees around Revelstoke, also at

Pass Creek Falls, near Sproat, Columbia River, B.C., May 5th, 1890.
(*Macoun.*)

116. THUIDIUM, Schimp.

(693.) **T. minutulum**, Bruch & Schimp., Bryol. Europ.; Canadian Musci, No. 268, in part.

Hypnum minutulum, Hedw.; Lesq. & James, Mosses of N. America, 322.

Bass River, N.B. (*Fowler's Cat.*) On old logs and rocks in McKay's woods at Ottawa; on old logs at Belleville and North Hastings, Ont.; on limestone rocks at Wooler and Owen Sound, Ont. (*Macoun.*)

(694.) **T. scitum**, Aust. Musc. Appal., No. 300; Canadian Musci, No. 269 and No. 268 in part.

Hypnum abietinum var. *minor*, Drumm. Musc. Bor.-Am., No. 217.

H. scitum, Beauv.; Lesq. & James, Mosses of N. America, 323.

On trees at Fredericton, N.B. (*Fowler's Cat.*) On beech trees in McKay's woods at Ottawa; quite common on beech trees around Belleville, Brighton, Wooler and Owen Sound, Ont. (*Macoun.*) On stones and trunks of trees, Ontario. (*Drummond.*)

Var. **lonchoneuro.**, Kindb. n. var. (n. sp. ?)

Differs in the stems being irregularly divided, sparingly radiculose, the branchlets thick, the stem-leaves more broadly revolute at the borders below the acumen, less papillose, the costa stout, percurrent or excurrent, the branch-leaves quite acute (in *T. scitum* subobtusely). Capsules not found. Differs from *T. gracile* in the entire leaves.

On old logs at the mouth of Sturgeon Creek, near Leamington, Ont., September 23rd, 1890. (*Macoun.*)

(695.) **T. gracile**, Bruch & Schimp.; Canadian Musci, No. 270.

Hypnum gracile, Bruch & Schimp.; Lesq. & James, Mosses of N. America, 324.

On rotten logs at Fredericton, N.B. (*Fowler's Cat.*) Abundant on rotten logs in woods at Leamy's Lake, near Ottawa; also on old logs at Belleville and Brighton, Ont. (*Macoun.*) Saskatchewan. (*Bourgeau.*)

Var. **Lancastriense**, Sulliv. & Lesq.

On earth in woods, five miles west of Belleville, Ont.; also on stones in woods at Port Dover, Ont. (*Macoun.*)

(696.) **T. lignicola**, Kindb. Ott. Nat. IV. p.

Monœcious. Tufts yellowish or bright green. Stems simply pinnate with few rhizoids and short, scarcely ramose paraphyllia; branches close, distichous, attenuate, flexuous or slightly recurved. Stem-leaves from the broad, cordate base attenuate to a long, often curved, point, faintly striate, reflexed on the borders; branch-leaves shorter, acuminate; all denticulate from the middle upward and papillose at the back or on both sides; cells obscure and rounded; costa vanishing in or below the apex. Capsule cylindrical, arcuate and light brown; teeth pale; cilia long, perfect; annulus double; lid conical, short-apiculate. Differs from *T. Blandowii* in the shorter areolation of the leaf-cells, the smaller capsule, the shorter paraphyllia and the generally shorter, 1 cm. long, pedicel.

On rotten logs at Port Dover, Ont.; on rotten logs along the base of the Porcupine Mountain, Man.; on old logs at Quesnel, B.C. (*Macoun.*)

(697.) **T. recognitum**, (Hedw.) Lindb.; Canadian Musci, No. 271.

Hypnum recognitum, Hedw.; Lesq. & James, Mosses of N. America, 325.

H. proliferum var. *compactum*, Drumm. Musc. Bor.-Am., No. 214.

Abundant in shady woods. (*Drummond.*) On rotten wood, Broad Cove, Labrador. (*Rev. A. Waghorne.*) On earth at the bases of trees in woods, Bass River, N.B. (*Fowler's Cat.*) At Truro, N.S.; wet woods, Brackley Point and Tignish, Prince Edward Island; damp woods near Ottawa; also in woods at Belleville and Owen Sound, Ont.; damp woods near Donald, Columbia Valley; at Revelstoke and on earth at Pass Creek, near Sproat, Columbia River; on earth at Sicamous and abundant at Quesnel, B.C., and west of the Fraser River at that point. (*Macoun.*) Common at London, Ont. (*J. Dearness.*) Greenland. (*Fl. Gr.*)

(698.) **T. delicatulum**, (Linn.) Mitt. Journ. Linn. Soc. XII. 578; Canadian Musci, No. 272.

Hypnum delicatulum, Linn.; Lesq. & James, Mosses of N. America, 325.

H. proliferum, Drumm. Musc. Bor.-Am. No. 213.

Shady woods; but not common. (*Drummond.*) Miquelon Island. (*Delamare.*) Broad Cove, Newfoundland; Little Bay Islands, Labrador. (*Rev. A. Waghorne.*) Pictou Co., N.S. (*McKay.*) On the ground at Bass River, N.B. (*Fowler's Cat.*) On earth in swamps at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) In Dow's swamp near Ottawa; quite common in cedar swamps at Belleville, Ont.; in a swamp at

Sturgeon Creek, Leamington, Ont. (*Macoun.*) Common at London, Ont. (*J. Dearness.*) Saskatchewan. (*Bourgeau.*)

(699.) **T. abietinum**, Bruch & Schimp.; Canadian Musci, No. 273.

Hypnum abietinum, Linn.; Lesq. & James, Mosses of N. America, 326; Drumm. Musc. Bor.-Am., No. 216.

Upon rocks in dry sandy soil; common. (*Drummond.*) On rocks, White Bay, Newfoundland. (*Rev. A. Waghorne.*) On rocks and ground, Restigouche, N.B. (*Fowler's Cat.*) Shaded rocks, Jupiter River, Anticosti; on rocks, Pirate's Cove. Straits of Canso, N.S.; on exposed rocks, McKay's woods, Ottawa; limestone rocks along the Moira at Belleville, Ont.; on rocks along Lake Nepigon, Ont.; dry rocks along Peace River, lat. 56°; also along the Bow River at Morley and Banff, and on rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains; dry rocks at Quesnel, B.C. (*Macoun.*) On dry rocks, Buffalo Lake, N.W.T. (*J. M. Macoun.*) Lake Winnipeg. (*Bourgeau.*) Greenland. (*Fl. Gr.*)

(700.) **T. Blandowii**, Bruch & Schimp.; Canadian Musci, No. 274.

Hypnum Blandowii, Web. & Mohr; Lesq. & James, Mosses of N. America, 326; Drumm. Musc. Bor.-Am., No. 215.

Miquelon Island. (*Delàmare.*) In marshes; abundant. (*Drummond.*) In bogs, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Peat swamp, Tignish, Prince Edward Island; in bogs, Salt Lake, Anticosti; peat swamp at Truro, N.S.; in Dow's swamp and at Britannia near Ottawa; also abundant in peat bogs in Hastings and Northumberland counties, Ont.; swamps at Morley and Stephen, Rocky Mountains; peat swamps, Telegraph Trail, west of Fraser River, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*)

(701.) **T. Whippleanum**, (Sulliv.) Kindb.

T. leskeoides, Kindb. Bull. Torr. Bot. Club, XVII., 277.

Hypnum (Cladopodium) Whippleanum, Sulliv.; Lesq. & James, Mosses of N. America, 328.

On rocks at Cedar Hill, near Victoria, and at the railway bridge over the Nanaimo River, near Nanaimo, Vancouver Island. (*Macoun.*)

(702.) **T. crispifolium**, (Hook.) Kindb.

Hypnum (Cladopodium) crispifolium, Hook.; Lesq. & James, Mosses of N. America, 329; Canadian Musci, Nos. 275 and 276.

British Columbia. (*Lyall.*) Vancouver Island. (*Wood.*) On rocks

at Revelstoke, and the mouth of Pass Creek, Columbia River; on rocks at Griffin Lake, Sicamous, Yale, Agassiz and Hastings, B.C.; quite common on Vancouver Island at Victoria, Nanaimo and Comox. (*Macoun.*) On rocks, Melaspina Inlet, B.C. (*Dawson.*) North-western Alaska. (*Roth, Alask.*) Kodiak Island, Alaska, 1891. (*J. M. Macoun.*)

(703.) ***T. laxifolium***, (Hook.)

Hypnum (*Claopodium*) *laxifolium*, Schwaegr; Lesq. & James, Mosses of N. America, 329.

North-west coast of America. (*Menzies.*) North-western Alaska. (*Roth, Alask.*)

117. TRIPTEROCADIUM, (C. Mueller.)

(704.) ***T. rupestre***, Kindb.

Platygyrium (?) *rupestre*, Kindb. Bull. Torr. Bot. Club, XVII., 276; Canadian Musci, No. 469.

Plants intricate, caespitose, pale brownish-green, not glossy. Stems irregularly divided, branchlets short, filiform, not creeping. Leaves small, densely crowded, when dry appressed, open-erect when moistened, scarious and pellucid, not chlorophyllose nor papillose, subovate, acute or long-acuminate, the upper denticulate above, the borders recurved below, sometimes to the middle or above it; areolation in the lower leaves sub-linear above, looser at the base, in the upper leaves looser, oblong-linear, in all subquadrate at the borders and at the base; costa none.

This species is probably monœcious, but the male flowers are not distinctly evolute. Differs from the related *Tripterocladium leucocladulum*, C. Muell. (not correctly described by Lesq. & James), of which I possess original specimens, (given by the author, Dr. C. Mueller,) in the leaves being revolute at the borders to the middle, nearly entire or indistinctly denticulate, also in the narrower areolation and the outer perichetial leaves being blunt, the inner erect, not reflexed at the apex. (*Kindberg.*)

On the face of a cliff above the first tunnel at Yale, B.C., May 17th 1889. (*Macoun.*)

118. CAMPTOTHECIUM, Schimp.

(705.) *C. lutescens*, Bruch & Schimp., Bryol. Europ.

Hypnum (Camptothecium) lutescens, Hedw. ; Lesq. & James, Mosses of N. America, 331.

About the roots of trees. (*Drummond.*) Alaska. (*Kellogg.*) Vancouver Island. (*Lyall.*) On roots of trees at Yale and Quesnel, B.C. (*Macoun.*) Kotzebue Sound and Alaska. (*Roth. Alask.*) Greenland. (*Fl. Gr.*)

(706.) *C. fulgescens*, Mitt., Bot. Zeit. XVI, 1858. 170.

On the bases of stumps along the railway a little east of Hastings, Burrard Inlet, B.C. ; also on stones in Roger's Pass, Selkirk Mountains. (*Macoun.*)

(707.) *C. æneum*, (Mitt.)

Hypnum æneum, Mitt. ; Lesq. & James, Mosses of N. America, 331.

Pend d'Oreille River, British Columbia. (*Lyall.*) On rocks at Mount Tolmie, near Victoria ; on logs at Cedar Hill, and on logs at Comox, Vancouver Island ; on the bases of trees at Agassiz, B.C. (*Macoun.*)

(708.) *C. Amesiae*, Ren. & Card., Coult. Bot. Gaz. XIII, 202.

On rocks at Sicamous, B.C., July 3rd, 1889 ; abundant on trees at Victoria, Vancouver Island. (*Macoun.*)

(709.) *C. Nuttallii*, (Wils.) Bruch & Schimp., Bryol. Europ.

Hypnum (Camptothecium) Nuttallii, Wils. ; Lesq. & James, Mosses of N. America, 332.

H. pinnatifidum, Canadian Musci, No. 280.

On trees, old logs and rocks around Victoria, Vancouver Island. (*Macoun.*) Vancouver Island. (*Lyall.*)

(710.) *C. Nevadense*, (Lesq.)

Hypnum Nevadense, Lesq. ; Lesq. & James, Mosses of N. America, 332.

Homalothecium pseudo-sericeum, Canadian Musci, No. 435.

On rocks at Agassiz, B.C., May 8th, 1890 ; on rocks at Lytton, Yale and Hastings, B.C. ; and at Victoria, Vancouver Island. (*Macoun.*)

(711.) **C. hamatidens**, Kindb.

Hypnum (Camptothecium) hamatidens, Kindb., Bull. Torr. Bot. Club, XVI., 97; Canadian Musci, No. 279.

Dioecious. Densely caespitose, yellow or green, glossy. Stems prostrate, scarcely or not radiculose, irregularly pinnate-ramose; branchlets short, attenuate and flexuose. Leaves open-erect, lanceolate, long filiform-acuminate, striate, hooked-denticulate or spinulose all around, reflexed on the borders; cells narrow, the basilar small and short; costa stout, vanishing at the apex. Perichetial leaves nerveless, narrowed into an erect, or flexuose, subulate point, entire or slightly denticulate. Capsule cylindric-oblong, curved, suberect or inclined, without a neck; segments split their whole length or coherent at the apex; cilia rudimentary; annulus narrow; lid conic-obtuse, depressed in the middle and mammillate; pedicel 1-1.5 cm. long, rough the whole length. Related to *H. Nuttallii*, Wils., but differs as above.

On rocks at Yale and Agassiz, B.C.; on trees at Mount Tolmie, near Victoria, Vancouver Island; (also at Nanaimo, June 8th, 1887.)? (*Macoun.*)

Var. **tenue**, Kindb., Bull. Torr. Bot. Club, XVII., 277; Canadian Musci, No. 392.

Branches longer, filiform, leaves smaller only at the base and hooked-denticulate at the apex.

On perpendicular rocks, Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C., May 10th, 1887. (*Macoun.*)

(712.) **C. nitens**, Schimp. Syn., 530.

Hypnum (Camptothecium) nitens, Schreb.; Lesq. & James, Mosses of N. America, 333; Canadian Musci, No. 278; Drum. Musc. Bor.-Am., No. 172.

In swamps; not common. (*Drummond.*) Mansfield Island, Hudson Straits. (*R. Bell.*) Peat bogs, Salt Lake, Anticosti; Dow's swamp and Mer Bleue, near Ottawa; peat swamps in Hastings and Northumberland counties, Ont.; peat bog, Lake Nepigon, Ont.; on wet limestone rocks, Hudson Hope, Peace River, lat. 56°; swamps at Morley, Banff, Stephen and Hector, Rocky Mountains; peat swamp west of the Fraser River at Quesnel, B.C. (*Macoun.*) Peat bogs, Port Arthur, Ont. (*Mrs E. G. Britton.*) In bogs, Portage la Loche, N.W.T. (*J. M. Macoun.*) Kotzebue Sound. (*Roth. Alask.*) Greenland. (*Fl. Gr.*) Bogs, Saskatchewan. (*Bourgeau.*) In swamps near London, Ont. (*J. Dearness.*)

(713.) **C. aureum**, (Lag.) Schimp.

On rotten logs at Cedar Hill, near Victoria, Vancouver Island, April 16th, 1887. (*Macoun.*) Also found near Victoria by Dr. Røell.

119. BRACHYTHECIUM, Schimp.(714.) **B. lætum**, (Brid.)

Hypnum (Brachythecium) lætum, Brid.; Lesq. & James, Mosses of N America, 335; Canadian Musci, No. 281.

Hypnum salebrosum, Drumm. Musc. Bor.-Am., No. 175, in part.

New Harbor, Newfoundland, and at Battle Harbor, Labrador. (*Rev. A. Waghorne.*) Bass River, N.B. (*Fowler's Cat.*) On stones in woods, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Pictou Co., N.S. (*McKay.*) Baie St. Paul, Charlevoix Co., Que. (*St. Cyr.*) Stones in woods, Gunn River, Anticosti; on stones in woods at Truro, N.S.; old logs, Gaspé Co., Que.; on stones in woods around Ottawa; on stones in woods at Belleville, Trenton, Wooler, Owen Sound and London, Ont. (*Macoun.*) In woods, London, Ont. (*J. Dearness.*) In marshy ground; rare. (*Drummond.*)

Obs. *Brachythecium lætum*, only found in America, has also a monœcious inflorescence (not "diœcious," Lesq. & James); the European *Brachythecium luteolum*, C. Mueller, is indeed diœcious.

(715.) **B. digastrum**, C. M. & Kindb. (n. sp.)

Tufts laxly cohering, olive-green, not shining. Stem rigid, sub-pinnate or irregularly branching, radiculose below; branches sub-julaceous, obtusate. Stem-leaves when dry loosely appressed or subimbricate, crowded, patent or subsecund when moist, decurrent, not auricled, plicate, bi-ventrose, ovate and short-acuminate with the acumen flexuous or when dry serpentine-corrugate, borders more or less recurved but not reflexed, subentire or faintly denticulate above; lower basal cells wide and sub-rhombic, the alar rather quadrate-rectangular and not very distinct, the upper confluent, small, very chlorophyllose, the inner median sublinear, the other oblong-lanceolate; costa thick and subflexuous, long and vanishing near the acumen. Branch-leaves ovate-oblong, more distinctly revolute at the borders, denticulate at the acumen and narrower areolate. Female flowers small, inner perichetial leaves filiform-acuminate with the acumen arcuate, long-costate and denticulate. Capsule asymmetric, sub-cylindric, curved; lid long-conic; pedicel smooth, 1-2 cm. long. Peristomial teeth conic-connivent when moist, dark red-brown below,

very much longer than those in the middle open segments; cilia nodulose, not appendiculate, annulus none. Monœcious. Habit of *Leucodon julaceus*.

The species is (*fide* C. Mueller) allied to *Brachythecium* (*Cavernularia*) *biventrosus*, C.M., but more robust. It agrees also with *B. lætum*, (Brid.) not found in Europe; it has long-acuminate, soft and shining, and when dry, patent leaves. The European *B. luteolum*, C. M., (*B. lætum*, Schimp., non Brid.) is also different from the true *B. lætum*, which is neither completely nor correctly described by Lesq. & James, principally in the dioecious inflorescence.

On rocks in McKay's bush, Ottawa, Ont., October 12th, 1889. (*Macoun.*) On rocks, Canaan Forks, Queen's Co., N.B., 1889. (*J. Moser.*)

(716.) ***B. spurio-acuminatum***, C. M. & Kindb. (n. sp.); Canadian Musci, No. 566.

Differs from *Brachythecium acuminatum* in the tufts being lax, loosely adhering at the substrate, the leaves denticulate and recurved at the borders nearly all around, the alar cells still more numerous and very chlorophyllose, the perichetial leaves subulate-acuminate, not filiform-pointed, the inflorescence monœcious.

On logs in woods, Brighton, Northumberland Co., Ont., October 6th, 1888; also on logs at Leamington, Lake Erie, Ont., 1890. (*Macoun.*)

(717.) ***B. acuminatum***, (Beauv.)

Hypnum (*Brachythecium*) *acuminatum*, Beauv.; Lesq. & James, Mosses of N. America, 336; Canadian Musci, No. 282.

H. pulchrum, Drumm. Musc. Bor.-Am., No. 180, in part.

H. erectum, Drumm. Musc. Bor.-Am., No. 224.

Pictou Co., N.S. (*McKay.*) Bases of trees, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On earth in McKay's woods, Ottawa; at Carleton Place, 30 miles west of Ottawa; on leaning trees at Wooler; on earth and logs in woods at Belleville, Ont.; on the bases of trees, Moose Mountain, Assiniboia. (*Macoun.*) In woods, London, Ont. (*J. Dearness.*) Upon trunks of trees in Upper Canada (No. 180) (Ontario); roots of trees in Upper Canada (No. 224.) (*Drummond.*)

* ***B. cyrtophyllum***, Kindb. (n. subsp.)

Brachythecium cyrtophyllum, Kindb. Ott. Nat. IV., 63.

Habit of a small form of *B. albicans*. Plants caespitose, green and faintly glossy. Stems irregularly divided, not creeping; branchlets filiform, sub-obtuse. Leaves small, close, loosely appressed when dry, open-erect when moistened, ovate-acute or short-acuminate, not sulcate

or decurrent, serrulate at least above the middle; areolation loose; upper cells narrowly rhomboidal, inner sublinear; alar quadrate, somewhat numerous, chlorophyllose; costa stout, reaching to $\frac{3}{4}$. Perigonal leaves ecostate. Dioecious.

On elm logs in thick woods, Brighton, Northumberland Co., Ont., October 6th, 1888. (*Macoun.*)

Var. **setosum**, Sulliv. & Lesq.

In holes in maple trees many feet above the ground at Belleville, Ont. (*Macoun.*)

(718.) **B. salebrosum**, Bruch & Schimp., Bryol. Europ.

Hypnum (*Brachythecium*) *salebrosum*, Hoffm.; Lesq. & James, Mosses of N. America, 336; Canadian Musci, No. 283; Drumm. Musc. Bor.-Am., No. 175.

Pictou Co., N.S. (*McKay.*) Norman's Cove and New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Bass River and Fredericton, N.B. (*Fowler's Cat.*) On earth, Tobique River and St. John, N.B. (*Hay.*) On earth at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Baie St. Paul, Charlevoix Co., Que. (*St. Cyr.*) Moist ground, Ste. Anne des Monts River, Gaspé Co., Que.; on stones in woods at Ottawa; on logs in woods at Belleville, Brighton, Wooler and Lake Superior, Ont.; on logs, Green Lake, N.W.T.; decayed trunks, Moose Mountain, Assiniboia; on logs along Peace River, lat. 56° ; on stones at Morley, Hector and Banff, Rocky Mountains; on logs at Agassiz, B.C.; and on earth at Victoria, Vancouver Island. (*Macoun.*) Common in cedar swamps at London, Ont. (*J. Dearness.*) Saskatchewan. (*Bourgeau.*) Pend d'Oreille River, B.C. (*Lyall.*) In marshy ground; rare. (*Drummond.*) Kotzebue Sound. (*Roth. Alask.*) Cape Vancouver, Alaska, 1891. (*J. M. Macoun.*) Greenland. (*Fl. Gr.*)

* **B. mamilligerum**, Kindb. (n. subsp.)

Monœcious. Tufts very dense and radiculose. Stem subpinnate. Leaves very patent in a dry state, striate, long, narrowly ovate-lanceolate, often filiform-pointed, borders not, or narrowly, recurved, faintly serrate; alar cells few; costa ordinarily vanishing in the middle, sometimes longer. Perichetial leaves long-aristate. Perigonal leaves subuliform-pointed. Capsule suboval, curved; segments narrowly rimose, not open; cilia nodose, not appendiculate; annulus none; lid mamillate; pedicel long, smooth.

On old wet logs near a spring along the road leading south from Sicamous, B.C., July 19th, 1889. (*Macoun.*)

Since the true *Brachythecium salebrosum* is an object of so many contrary descriptions by different authors, we have preferred to propose this form separately.

Schimper says, *Syn. muscor. Europ.* ed. 2, II, 641 :—operculo conico, annulo angusto, processus in carina hiantes.

Lesq. & James, *Mosses of N. America*, p. 336 :—operculum conical, annulus narrow, cilia articulate.

C. Mueller, *Syn. Muscor. Omn.*, II., 359 :—folia caulinae laxè imbricata, late ovata longe latiuscule acuminata, perichetalia longe reflexa acuminata ; theca exannulata ; operculo conico acuto, perist. d. int. valde hiantes, ciliis appendiculatis. From the last description the present one differs considerably.

(719.) **B. glareosum**, (Bruch), *Bryol. Europ.* ; C. Muell., *syn.* 361.

Hypnum lutescens, Drumm. *Musc. Bor.-Am.*, No. 174.

About the roots of trees. (*Drummond.*) On earth at the roots of trees in woods west of the Columbia River at Revelstoke, B.C. (*Macoun.*)

(720.) **B. Rœllii**, Ren. & Card.

Near Victoria, Vancouver Island. (*Dr. Rœll.*)

(721.) **B. lævisetum**, Kindb., *Bull. Torr. Bot. Club*, XVII., 279.

Habit of *B. populeum*. Plants caespitose, green and glossy. Stem irregularly ramulose. Leaves close, sub-erect, open, ovate-lanceolate, acuminate and acute, sulcate ; borders serrulate from the middle upwards ; basal cells dilatate ; costa long, reaching at least two-thirds of the leaf. Capsule small, incurved, oblong ; outer teeth hyaline-margined, light brown ; cilia short and not appendiculate ; perichetial leaves nerveless ; lid highly convex, not apiculate ; pedicel very smooth. Monoecious.

In small quantity on a rotten log in the valley of Eagle River at Craigellachie, Gold Range, B.C., July 18th, 1889. (*Macoun.*)

(722.) **B. acutum**, (Mitt.) *Sulliv. Icon. Suppl.* 99.

Hypnum (Brachythecium) acutum, Mitt. ; Lesq. & James, *Mosses of N. America*, 337 ; *Canadian Musci*, No. 438.

Pack River, British Columbia. (*Lyall.*) Mansfield Island, Hudson Strait, 1885. (*R. Bell.*) On earth in wet woods, Beechwood, Ottawa, Ont. ; and west of Hull, Que. ; on logs at Hastings, and on earth at Quesnel, B.C. (*Macoun.*)

(723.) **B. albicans**, Bruch & Schimp., Bryol. Europ.

Hypnum (Brachythecium) albicans, Neck. ; Lesq. & James, Mosses of N. America, 337 ; Canadian Musci, No. 285, in part ; Drumm. Musc. Bor.-Am., No. 173.

Hypnum salebrosum, Drumm. Musc. Bor.-Am., No. 175, in part.

Rocky Mountains. (*Bourgeau*.) Heart's Delight, Newfoundland. (*Rev. A. Waghorne*.) Bass River, N.B. (*Fowler's Cat.*) On earth at Salt Lake, Anticosti ; on earth in woods, Brackley Point, Prince Edward Island ; on rotten logs in a swamp at Brighton, Ont. ; on rotten logs at Owen Sound, Ont. ; on rotten logs, Roger's Pass, Selkirk Mountains ; on earth at Yale and Quesnel, B.C. ; on sand at Comox Bar, Vancouver Island. (*Macoun*.) On dry barren ground amongst grass (No. 173) ; in marshy ground (No. 175). (*Drummond*.) St. Paul Island, Behring Sea. (*Palmer*.) Greenland. (*Fl. Gr.*)

(724.) **B. harpidioides**, C. M. & Kindb. (n. sp.)

Tufts compact, soft, radiculose below, whitish or bright green, not shining. Stems intricate, irregularly branching or pinnate. Leaves patent, somewhat loosely disposed, decurrent, more or less arcuate (principally the upper), not auricled, plicate, nearly flat, ovate and subulate-acuminate ; borders faintly denticulate and recurved often all around ; cells distinctly chlorophyllose, the alar large, subquadrate, the other lanceolate. Dioecious. Capsules not found.

This species resembles some forms of *Brachythecium albicans*, but is very peculiar in the arcuate leaves as in the section *Harpidium* of the genus *Hypnum*.

On old logs in woods along the Columbia River above Revelstoke, May 6th, 1890. (*Macoun*.) On logs in woods at Canaan Forks, Queen's Co., N.B., 1889. (*J. Moser*.)

(725.) **B. cirrhosum**, (Schwaegr.) Schimp. Syn. ed. II., 866.

Greenland. (*Fl. Gr.*)

(726.) **B. trachypodium**, (Brid.) Bryol. Europ. VI.

Greenland. (*Fl. Gr.*)

(727.) **B. pseudo-albicans**, Kindb., Bull. Torr. Bot. Club, XVII., 278.

Hypnum (Brachythecium) albicans, Neck. var. (?) or n. sp. ; Canadian Musci, No. 285, in part.

Differs from the true *B. albicans* (Neck.), in having the leaves looser, sub-distichous, shorter-acuminate, faintly striate, denticulate all

around; the alar cells greater, all the basal cells finally reddish. Barren.

On earth in woods at Comox, Vancouver Island, May 5th, 1887. (*Macoun.*)

(728.) **B. platycladum**, C. M. & Kindb. (n. sp.)

Hypnum (*Brachythecium*) *Rutabulum*, Canadian Musci, No. 287, in part.

Tufts densely cohering, bright-green, shining. Stem irregularly branching; branches short, obtuse, complanate. Leaves loosely imbricate or patent, nearly flat, long-decurrent, distinctly auriculate, faintly striate, broad, ovate, suddenly and generally short-acuminate; borders not recurved, faintly sinuate or sub-entire below the middle, more distinctly denticulate above; cells pale, the upper narrow, the lower near the base dilated, the alar large and well-defined; costa short, reaching little above the middle. Capsule suboval, faintly curved; teeth dark-yellow, entire at the borders; cilia not appendiculate; lid unknown; pedicel rough, about 2 cm. long or shorter. Perichetial leaves long, filiform-acuminate, the point arcuate. Dioecious.

Differs from *B. Rutabulum* principally in the long-decurrent auricled leaves and the dioecious inflorescence; from *B. rivulare* in the peristome, &c.

On stones by brooks in woods west of Ottawa, Ont., May 21st, 1885. (*Macoun.*)

(729.) **B. gemmascens**, C. M. & Kindb. (n. sp.)

Tufts very dense, green, finally rufescent. Stem irregularly branching, furnished with numerous male buds. Leaves narrow, ovate-lanceolate with a twisted point, faintly denticulate all around, crowded, not decurrent nor auricled; cells pale, nearly all narrow, only the lowest 1-2 rows of the basal dilated, the alar not larger than the inner; costa prolonged above the middle, vanishing below the acumen. Capsule small, round-oval, oblique; teeth dark-orange, segments shorter than the very high basal membrane, cilia not appendiculate; lid conic, short-pointed; pedicel minutely verrucose, about 1 cm. long. Monoecious. This species seems to be allied to *B. Starkii*, but well-distinct.

On wet logs along the Columbia River, above Revelstoke, B.C., May 12th, 1890. (*Macoun.*)

(730.) **B. Donnellii**, Aust. Coult. Bot. Gaz. IV., 162.

Hypnum (*Brachythecium*) *Donnellii*, Aust.; Lesq. & James, Mosses of N. America, 338.

On rocks in McKay's woods, near Ottawa, Ont. (*Macoun.*)

(731.) **B. collinum**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) collinum, Schleich. ; Lesq. & James, Mosses of N. America, 339 ; Canadian Musci, No. 398.

On gravel on the prairie south of the Touchwood Hills, Assiniboia ; on earth in the Cypress Hills, Alberta ; on stones at the mouth of Smoky River, lat. $56^{\circ} 20'$; on dry rocks at Morley, Rocky Mountains ; in ravines at Kamloops and on dry rocks at Lytton, B.C. (*Macoun.*) Cascade Mountains, B.C. (*Lyll.*) Greenland. (*Fl. Gr.*)

(732.) **B. pseudo-collinum**, Kindb. (n. sp.)

Agrees with *Brachythecium collinum* in the pinnate and creeping stem, the decurrent leaves denticulate all around, the short, suboval capsule and the smooth pedicel ; differs in the stems not being julaceous, the leaves larger and longer, ovate-lanceolate, more loosely disposed, spreading or patent, gradually tapering into the short, half-twisted acumen, the cells chlorophyllose, the alar ones larger, the costa longer, reaching above the middle. Monœcious.

The true *Brachythecium collinum* has short-ovate, appressed and imbricate leaves, suddenly narrowed with a prolonged filiform, not twisted, point ; the upper cells are hyaline, the alar small, the costa generally short, reaching to the middle. It is a high-alpine plant.

Under a platform of a well at Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

(733.) **B. velutinum**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) velutinum, Linn. ; Lesq. & James, Mosses of N. America, 339 ; Canadian Musci, No. 379.

Pend d'Oreille River, B.C. (*Lyll.*) On the bases of trees in woods at Belleville, Ont. ; on earth in Gilmour's Park, Chelsea, Que. ; on earth in woods, Brackley Point, Prince Edward Island. (*Macoun.*) On earth near London, Ont. (*J. Dearness.*)

(734.) **B. Starkii**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) Starkii, Brid. ; Lesq. & James, Mosses of N. America, 341 ; Canadian Musci, No. 284.

Near New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Bass River, N.B. (*Fowler's Cat.*) Greenland. (*Fl. Gr.*) Miquelon Island. (*Delà-mare.*) Abundant on old logs and earth in woods at Rustico Bay, Prince Edward Island ; on stones in brooks west of Ottawa ; quite common on logs at Owen Sound, Ont. ; at Comox, Vancouver Island. (*Macoun.*)

(735.) **B. ædipodium**, (Mitt.)

Hypnum (Brachythecium) ædipodium, Mitt. ; Lesq. & James, Mosses of N. America, 342 ; Canadian Musci, No. 380, in part.

Lake Huron. (*Dr. Todd.*) Pack River, B.C. (*Lyall.*) Abundant in woods at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On old logs and earth in woods around Ottawa ; on old logs in woods along the Columbia River at Revelstoke, B.C. (*Macoun.*)

(736.) **B. curtum**, Lindb.

B. ædipodium, Canadian Musci, No. 380, in part.

On earth in woods at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Very common at Brackley Point and Hunter's River, Prince Edward Island ; also in McKay's bush, Ottawa, Ont. (*Macoun.*) Confounded with *B. Starkii*.

(737.) **B. reflexum**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) reflexum, Starke ; Lesq. & James, Mosses of N. America, 342 ; Canadian Musci, No. 286.

Miquelon Island. (*Delàmare.*) Battle Harbor, coast of Labrador. (*Rev. A. Waghorne.*) Bass River and Fredericton, N.B. (*Fowler's Cat.*) Bases of trees, Gunn River, Anticosti ; bases of trees and on earth at Hunter's River and Brackley Point, Prince Edward Island ; on earth along the Gaspé coast and at the base of Mount Albert, Gaspé Co., Que. ; on stones in woods at Owen Sound, Ont. ; on stones along the Red Deer River, west of Lake Winnipegosis, Man ; on earth at the bases of trees in woods at Revelstoke, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*)

(738.) **B. Rutabulum**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) Rutabulum, Linn. ; Lesq. & James, Mosses of N. America, 342 ; Canadian Musci, No. 287, in part ; Drumm. Musc. Bor.-Am., Nos. 178, 179.

Upper Canada, near Nottawasaga Portage (179) ; shady woods ; (178). (*Drummond.*) Placentia Bay and Green Harbor, Newfoundland. (*Rev. A. Waghorne.*) Bass River, N.B. (*Fowler's Cat.*) Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) Wet ground, Dundas Ravine, near Hamilton, Ont. (*Burgess.*) This species is probably rare in Canada and often confounded with other ones.

(739.) **B. spurio-rutabulum**, C. M. & Kindb. (n. sp.)

Differs from *Brachythecium Rutabulum* in the diœcious inflorescence, the leaves distinctly plicate, longer cuspidate, and the rough, short

pedicel, about 1 cm. long. The tufts are dense, the stems pinnate and creeping, the leaves shining, when dry very patent, loosely disposed, long-decurrent, borders recurved below to the middle, faintly denticulate.

On the bases of trees, North Arm, Burrard Inlet, B.C., April 29th, 1889; also at Sicamous, B.C. (*Macoun.*)

(740.) ***B. leucoglaucum***, C. M. & Kindb. (n. sp.); Canadian Musci, No. 591.

Tufts loose with few rhizoids, whitish or subglaucous-green, faintly shining. Stem sub-pinnate or irregularly branching. Leaves from the ovate base suddenly tapering into a somewhat long-filiform, often half-twisted, point, sharply serrate above, faintly denticulate below, striate, decurrent, borders reflexed below; alar cells small, numerous, the others narrow; costa long, sometimes subpercurrent. Perichetial leaves long, filiform-acuminate, arcuate-squarrose. Capsule curved, oblong-cylindric; lid subobtusate when moist; pedicel faintly rough, about 1.5 cm. long; peristome conic-connivent, teeth serrulate, pale above, segments open in the middle, papillose above, cilia not appendiculate. Monœcious. Intermediate between *Brachythecium Rutabulum* and *B. curtum*.

On loose earth at Canaan Forks, Queen's Co., and Elmwood, King's Co., N.B., September 10th, 1888. (*J. Moser.*)

(741.) ***B. rutabuliforme***, Kindb. (n. sp.)

Agrees with *Brachythecium Rutabulum* in the very rough pedicel, the monœcious inflorescence and the form of the leaves; differs principally in the rigid stem, the distinctly appendiculate cilia of the peristome and the short pedicel, about 1 cm. The leaves are subovate, short-acuminate, nearly estriate and faintly denticulate.

Growing on stones in a brook north of Spence's Bridge, B.C., May 30th, 1889. (*Macoun.*)

(742.) ***B. Columbico-rutabulum***, Kindb. (n. sp.)

Tufts dense, faintly shining, finally brownish-green. Stem elongate, pinnate, creeping. Stem-leaves patent, from the broadly ovate base long-cuspidate with a filiform, generally prolonged point, decurrent, very plicate, nearly entire, borders shortly reflexed below; cells not chlorophyllose, the alar larger and well-distinct. Perichetial leaves suberect-patent with a long, filiform, arcuate point, faintly and distantly denticulate. Capsule oblong-cylindric, curved; peristomial teeth not serrulate, segments very open in the middle, cilia faintly

nodulose, not appendiculate; pedicel very rough, about 2 cm. long. Monœcious.

This species resembles *Brachythecium spurio-rutabulum* in habit, but the leaves are still more plicate and nearly entire; the pedicel also is longer. It differs from *Brachythecium Rutabulum* only in the very plicate leaves, etc.

On very wet and rotten logs in woods along the Columbia River about one mile above Revelstoke, B.C., May 13th, 1890. (*Macoun.*)

(743.) **B. lamprochryseum**, C. M. & Kindb. (n. sp.)

Tufts large, laxly cohering to the substrate with few rhizoids, golden-yellow, shining or finally decolorate. Stem elongate, often pinnate; branches generally short or sometimes more elongate and faintly curved above, subacute. Leaves open, more or less loosely disposed, long-decurrent, distinctly auriculate, very plicate, from the triangular-ovate base short-acuminate, filiform or subulate-cuspidate, often curved at apex, nearly flat, only the auricles faintly revolute; borders faintly denticulate all around; most of the cells long and very narrow, the lowest basal ones dilated and short, also the alar, all very sparingly chlorophyllose; costa broader at the base, faint, reaching to the middle, but in the smaller narrower and more loosely disposed leaves of some branchlets longer, reaching to the acumen. Capsule short, sub-ovoid, thicker near the base, slightly contracted below the mouth, arcuate; lid unknown; teeth finally brown at least at the base; cilia not appendiculate; pedicel very rough, about 3 cm. long. Perichetial leaves nerveless, when dry squarrose, the inner sheathing with a short, subulate acumen and a long, filiform point. Monœcious.

Allied to *Brachythecium Rutabulum*, but distinct in the nearly plane (not concave), auriculate, long-decurrent and very plicate leaves.

On stones, Mount Finlayson near Goldstream; on Mount Benson near Nanaimo and at Comox, Vancouver Island, 1887. (*Macoun.*)

(744.) **B. mirabundum**, C. M. & Kindb. (n. sp.)

Tufts large, very laxly cohering, nearly without rhizoids, silky or yellowish-green, faintly shining. Stem elongate, irregularly divided or prolonged, into sciuroid-curved, obtuse branches. Leaves loosely imbricate, crowded, when dry subrugose, when moist patent, short-decurrent, indistinctly auriculate, faintly plicate, from the concave, ovate and gradually acuminate base long-cuspidate; borders broadly recurved at least at one side of the nearly entire base to the involute and distinctly denticulate acumen; cells pale, elongate, and narrow, the alar subquadrate and not much wider than the other basal ones, all

sparingly chlorophyllose; costa vanishing in the acumen. Capsule small, at the base indistinctly gibbous, narrow, cylindric, and curved; lid elongate-conic; pedicel very short, 0.5—0.8 cm., very faintly muriculate. Perichetial leaves nerveless, longer filiform-cuspidate, irregularly sinuolate, the point patent or arcuate; basal cells larger, rectangular; archegonia numerous, about 20. Monœcious.

This species is allied to *Brachythecium Rutabulum*, differs principally in the minutely muriculate and short pedicel of the small, narrow capsule, also in the leaves.

On old logs in woods, Canaan Forks, Queen's Co., and Elmwood, King's Co., N.B., July, 1888. (*J. Moser.*)

(745.) **B. asperillum**, (Mitt.)

Hypnum (Brachythecium) asperillum, Mitt.; Lesq. & James, Mosses of N. America, 343.

British Columbia. (*Lyll, Douglas.*) On earth at Quesnel, B.C. (*Macoun.*) On logs, Melaspina Inlet, Gulf of Georgia, B.C. (*Dawson.*)

(746.) **B. vallum**, Sulliv. & Lesq.

On old logs near Victoria, Vancouver Island, May 7th, 1875. (*Macoun.*)

(747.) **B. glaciale**, Bruch & Schimp., Bryol. Europ.

Greenland. (*Fl. Gr.*)

(748.) **B. campestre**, Bruch & Schimp., Bryol. Europ.

Hypnum (Brachythecium) campestre, Bruch; Lesq. & James, Mosses of N. America, 344.

On the ground at Bass River, N.B. (*Fowler's Cat.*) On rocks and logs, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On Kettle River, British Columbia. (*Watson.*)

(749.) **B. rivulare**, Bruch & Schimp., Bryol. Europ.

Hypnum (Brachythecium) rivulare, Bruch MS.; Lesq. & James, Mosses of N. America, 344; Canadian Musci, No. 288.

Camptothecium megaptitum, Canadian Musci, No. 439.

Miquelon Island. (*Delàmare.*) Bass River and Fredericton, N.B. (*Fowler's Cat.*) On earth at Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser.*) On damp earth, Brackley Point, Prince Edward Island; in wet woods at Ottawa; common on stones in brooks and wet woods at Belleville, Brighton, Niagara Falls, Owen Sound and

Leamington, Ont. (*Macoun.*) Cape Chudleigh, Hudson Strait. (*R. Bell.*) On stones in brooks, Little Tobique River, N.B. (*Hay.*) Greenland. (*Fl. Gr.*) Kotzebue Sound. (*Roth. Alask.*) On the base of stumps along the Canadian Pacific Railway at Hastings, B.C.; also on damp earth in Roger's Pass, Selkirk Mountains. (*Macoun.*)

Var. obtusulum, Kindb.

Brachythecium rivulare * *Novæ-Brunsviciæ*, Kindb. Ott. Nat. IV., 3; Canadian Musci, No. 492.

Stem irregularly divided; branches simple and elongate. Leaves glossy, ovate, blunt or short-acute, striate, decurrent, indistinctly denticulate above or from the middle; cells dilatate, principally the lower and the uppermost, the alar and basilar finally orange-reddish, the alar rarely greater; costa short and simple.

On wet rocks at Fredericton, N.B. (*Prof. Fowler.*) On a horse trough and on stones in brooks and springs at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On stones at Potawatamie Falls, Owen Sound, Ont.; in springy places at Belleville, Ont.; on logs in a marsh at Revelstoke, B.C. (*Macoun.*)

(750.) **B. nanopes**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 548.

Allied to *Brachythecium populeum* in habit, in the peristome, the monœcious inflorescence, the pedicel faintly rough above, the long and subpercurrent costa of the leaves; differs however in the stems not creeping, nearly without rhizoids, the branches unilateral, the leaves smaller and narrower at the base, the stem-leaves long filiform-apiculate, subentire and not, or indistinctly, recurved at the borders, the lower decurrent; the capsule is smaller, the pedicel shorter, about 7-8 mm. long, the peristome pale-orange, the cilia long and indistinctly appendiculate.

On earth along the Columbia River above Revelstoke, B.C., May 19th, 1890. (*Macoun.*)

(751.) **B. populeum**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) populeum, Hedw.; Lesq. & James, Mosses of N. America, 345; Canadian Musci, No. 441; Drumm. Musc. Bor.-Am., No. 176.

On rocks, Pictou Co., N.S. (*McKay.*) Bass River, N.B. (*Fowler's Cat.*) Miquelon Island. (*Delàmare.*) On granite boulders at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks in Gilmour's Park, Chelsea, Que.; also on rocks in McKay's woods, Ottawa; on rocks,

Sudbury, Junction, Ont.; on damp rocks at Owen Sound, Ont. (*Macoun.*) Upon large stones about Lake Superior; and on the rocks in Portage River, Rocky Mountains. (*Drummond.*)

(752.) **B. plumosum**, Bruch & Schimp. Bryol. Europ.

Hypnum (Brachythecium) plumosum, Swartz; Lesq. & James, Mosses of N. America, 345; Canadian Musci, No. 289; Drumm. Musc. Bor.-Am., No. 177.

Heart's Delight, Blaketown, Hopewell Bay and New Harbor, Newfoundland. (*Rev. A. Waghorne.*) Bass River and Fredericton, N.B. (*Fowler's Cat.*) Elmwood, King's Co., and Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Miquelon Island. (*Delamare.*) Baie St. Paul, Charlevoix Co., Que. (*St. Cyr.*) On rocks at Pirate's Cove, Straits of Canso, N.S.; on stones in McKay's woods, Ottawa; at Belleville and on stones Gull River, Victoria Co.; on stones at Colpoy's Bay, Bruce Co., and North Shore of Lake Superior and on islands in Lake Nipigon, Ont.; on stones at Quesnel, B.C. (*Macoun.*) Upon moist rocks at Lake Superior. (*Drummond.*)

(753.) **B. turgidum**, Hartm. Skand. Fl. ed. X. 16.

In peat bogs, Stephen, Rocky Mountains, (*Macoun.*) Greenland. (*Fl. Gr.*)

120. SCLEROPodium, Schimp.

(754.) **S. caespitosum**, Bruch & Schimp. Bryol. Europ.

Hypnum caespitosum, Wils.; Lesq. & James, Mosses of N. America, 346; Canadian Musci, No. 290.

Alaska. (*Kellogg.*) On rocks, Mount Tolmie and Mount Finlayson, near Victoria, Vancouver Island. (*Macoun.*)

(755.) **S. obtusifolium**, (Hook.) Kindb.

Hypnum (Limnobium) obtusifolium, Hook.; Lesq. & James, Mosses of N. America, 400; Canadian Musci, No. 359; Drumm. Musc. Bor.-Am., No. 193.

In a rivulet in the Rocky Mountains. (*Drummond.*) On rocks in brooks at Revelstoke; wet rocks in a brook at Deer Park, Columbia River; on stones in mountain brooks at Griffin Lake, Spence's Bridge, Yale and Agassiz, B.C.; common at Goldstream, on Mount Benson and on the falls of Somas River near Alberni, Vancouver Island. (*Macoun.*)

- (756.) **S. Krausel**, C. Mueller.

Alaska. (*Krause*.)

- (757.) **S. illecebrum**, (Schwaegr.) Bryol. Europ.

Hypnum illecebrum, Schwaegr.; Lesq. & James, Mosses of N. America, 347.

Alaska. (*Kellogg*.)

121. ISOTHECIUM, Brid.

- (758.) **I. myosuroides**, Brid. Bryol. Univ. II., 369.

Hypnum myosuroides, Linn.; Lesq. & James, Mosses of N. America, 347;
Canadian Musci, No. 291, in part.

On stumps and old logs, Melaspina Inlet, Gulf of Georgia, B.C. (*Dawson*.) On old logs at Comox, Vancouver Island. (*Macoun*.) On trees, Nova Scotia. (*James*.) On trees at New Harbor, Hopewell Bay and Speedwell Bay, Newfoundland. (*Rev. A. Waghorne*.)

- (759.) **I. stoloniferum**, (Hook.) Brid. Bryol. Univ. II., 371.

Hypnum stoloniferum, Hook.; Lesq. & James, Mosses of N. America, 348;
Canadian Musci, No. 292, in part.

H. myosuroides, Canadian Musci, No. 291, in part.

H. spiculiferum, Canadian Musci, No. 293, in part.

Vancouver Island. (*Wood*.) British Columbia. (*Lyall*.) North-west America. (*Menzies*.) Nootka Sound. (*Barclay*.) Forward Inlet, Gulf of Georgia, B.C. (*Dawson*.) On rocks, North Arm, Burrard Inlet; on trees, very common, in woods at Hastings, B.C.; very abundant on old logs near the sea at Comox, Vancouver Island. (*Macoun*.)

- (760.) **I. Cardoti**, Kindb. Bull. Torr. Bot. Club, XVII., 278; Canadian Musci, No. 394.

On the bases of trees at Hastings, B.C.; also on logs near Victoria, Vancouver Island. (*Macoun*.) Queen Charlotte Islands; on logs Melaspina Inlet, Gulf of Georgia, B.C. (*Dawson*.)

- (761.) **I. lentum**, (Mitt.) Lesq. & James.

Hypnum lentum, Mitt.; Lesq. & James, Mosses of N. America, 350.

H. stoloniferum, Canadian Musci, No. 292, in part.

North-west coast of America. (*Douglas*.) On trees in the vicinity of Victoria, Vancouver Island. (*Macoun*.)

(762.) **I. Brewerianum**, (Lesq.) Lesq. & James.

Hypnum Brewerianum, Lesq. ; Lesq. & James, Mosses of N. America, 349 ; Canadian Musci, No. 294, in part.

On rocks, North Arm, Burrard Inlet, B.C. ; also on rocks at Esquimaux, near Victoria, Vancouver Island. (*Macoun.*)

(763.) **I. myurellum**, Kindb. Bull. Torr. Bot. Club, XVII., 278 ; Canadian Musci, No. 397.

Tufts very loose, dark green, not glossy. Stems creeping ; branches (secondary stems) erect, tree-like and ramose ; branchlets curved, attenuate. Leaves of the branches appressed when dry, small, ovate, blunt or short-acuminate, twice serrate or denticulate all around, smooth, scarcely reflexed on the borders ; alar cells round-quadrate, the middle ones narrow, upper rhombic ; costa long, three-fourths the length of the leaf. Perichetial leaves nerveless, oblong with a long, denticulate, horizontally patent acumen and narrow cells. Capsule oval-oblong, inclined ; segments with a low basilar membrane and two short cilia ; annulus double ; lid conical, acuminate ; pedicel smooth. Diccious.

On decaying logs and rocks below the railway bridge over the Nanaimo River, Vancouver Island. (*Macoun.*) Drew's Harbor, Gulf of Georgia, B.C. (*Dawson.*)

(764.) **I. spiculiferum**, (Mitt.) Lesq. & James.

Hypnum spiculiferum, Mitt. ; Lesq. & James, Mosses of N. America, 348.

British America. (*Lya'll, Douglas.*)

(765.) **I. acuticuspis**, (Mitt.) Lesq. & James.

Hypnum acuticuspis, Mitt. ; Lesq. & James, Mosses of N. America, 349.

British Columbia. (*Douglas.*)

(766.) **I. aggregatum**, (Mitt.) Lesq. & James.

Hypnum aggregatum, Mitt. ; Lesq. & James, Mosses of N. America, 350.

Vancouver Island. (*Lyall.*) British Columbia. (*Douglas.*)

(767.) **I. aplocladum**, (Mitt.) Lesq. & James.

Hypnum aplocladum, Mitt. ; Lesq. & James, Mosses of N. America, 350.

North-west coast of America. (*Douglas.*)

122. EURHYNCHIUM, Schimp.

- (768.) **E. strigosum**, (Hoffm.) Bruch. & Schimp. Bryol. Europ.

Hypnum strigosum, Hoffm. ; Lesq. & James, Mosses of N. America, 351 ;

Canadian Musci, No. 295 ; Drumm. Musc. Bor.-Am., No. 183.

Hypnum substrigosum, Canadian Musci, No. 449, in part.

Pictou Co., N.S. (*McKay*.) Bass River, N.B. (*Fowler's Cat.*) On earth in woods, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) Roots of trees, South West Point, Anticosti ; on earth at Brackley Point, Prince Edward Island ; on earth in woods, Gaspé Co., Que. ; on earth and stones in McKay's woods, Ottawa ; on the earth in woods at Belleville, Wooler and Owen Sound, also Sudbury Junction and Lake Nepigon, Ont. ; shaded ground, Lake Winnipegosis, Man. ; on earth at Kicking Horse Lake, Rocky Mountains ; on earth in woods at Agassiz and Yale, B.C. (*Macoun*.) Rocky Mountains. (*Bourgeau*.) Galton Mountains, B.C. (*Lyll*.) Nulato, Alaska. (*Roth, Alaska*.) Greenland. (*Fl. Gr.*)

- (769.) **E. diversifolium**, (Schimp. MS.) Bruch & Schimp. Bryol. Europ.

Hypnum diversifolium, Schimp. MS. ; Lesq. & James, Mosses of N. America, 352 ; Canadian Musci, No. 500.

On earth in woods at Ottawa ; on sandy soil, Dawson Route, west of Lake Superior ; on earth near Lesser Slave Lake, N.W.T. ; on earth at Quesnel and Hastings, B.C. ; on rocks at Deer Park, Lower Arrow Lake and at Pass Creek Falls, near Sproat, B.C. (*Macoun*.) Greenland. (*Fl. Gr.*)

- (770.) **E. substrigosum**, Kindb. (n. sp.) ; Canadian Musci, No. 449, in part.

Differs from *E. strigosum* in the distant branches, being complanate, the leaves long-decurrent, and twice greater, patent, sub-distichous, the capsule (unripe) very constricted below the orifice, the cilia appendiculate and the inflorescence monœcious.

On rocks along Lake Mara, near Sicamous, B.C., July 3rd, 1889. (*Macoun*.)

- (771.) **E. Vaucheri**, (Schimp.)

Hypnum Vaucheri, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 414.

On rocks along the Gaspé coast, Que., August 2nd, 1882 ; on rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains. (*Macoun*.)

St. George Island, Behring Sea, 1891. (*J. M. Macoun.*) Canada.
(*Macoun* fide *Austin.*)

(772.) **E. piliferum**, (Schreb.) Bruch & Schimp. Bryol. Europ.

Hypnum piliferum, Schreb. ; Lesq. & James, Mosses of N. America, 353.

Greenland. (*Fl. Gr.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

(773.) **E. Boscii**, (Schwaegr.)

Hypnum Boscii, Schwaegr. ; Lesq. & James, Mosses of N. America, 352.

H. illecebrum, Drumm. Musc. Bor.-Am., No. 192.

On the ground in (Ontario) Upper Canada. (*Drummond.*) Doubtful.

(774.) **E. Dawsoni**, Kindb. Bull. Torr. Bot. Club, XVII., 278.

Stems pinnate, not or rarely radiculose ; branchlets patent. Leaves green or brownish, not glossy, not, or indistinctly, papillose, not long-acuminate from the broad, ovate base, recurved on the borders below, long-decurrent, open-erect, denticulate all around ; areolation variable, often sub-rhomboidal ; costa thick, reaching nearly to the apex. Probably dioecious. Allied to *E. hians* and *E. Sullivantii*

On rocks along the Nanaimo River, below the railway bridge, Nanaimo, Vancouver Island, April 26th, 1887 ; on stones in a ditch, west side of Black's hotel, Hastings, B.C., 1889. (*Macoun.*)

(775.) **E. prælongum**, Bruch & Schimp. Bryol. Europ.

Tay, York Co., N.B. (*J. Moser.*)

(776.) **E. Sullivantii**, (Spruce.) Lesq. & James.

Hypnum Sullivantii, Spruce, MS. ; Lesq. & James, Mosses of N. America, 353 ; Canadian Musci, No. 296.

On rocks at Truro, N.S. (*Fowler's Cat.*) On rocks at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks at Hull, Que. ; abundant on limestone rocks, Royston Park, near Owen Sound, Ont. (*Macoun.*)

(777.) **E. hians**, (Hedw.) Lesq. & James.

Hypnum hians, Hedw. ; Lesq. & James, Mosses of N. America, 354 ; Canadian Musci, No. 442, in part.

Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On earth at Pirate's Cove, Strait of Canso, N.S. ; on earth in McKay's woods, near the lake, Ottawa ; on old logs and damp rocks at Hastings, B.C. (*Macoun.*)

(778.) **E. Stokesii**, (Turn.) Bruch & Schimp. Bryol. Europ.

Hypnum Stokesii, Turn.; Lesq. & James, Mosses of N. America, 354;
Canadian Musci, No. 297.

Hypnum praelongum, Linn.; Lesq. & James, Mosses of N. America, 353.

H. hians, Canadian Musci, No. 442 in part.

British Columbia, near the 49th parallel. (*Lyall*.) Vancouver Island. (*Lyall*, *Wood*.) On earth in woods at Revelstoke; abundant on wet rocks and earth at Hastings, Burrard Inlet and Agassiz, B.C.; on rocks and old logs at Victoria, Esquimalt, Nanaimo and Comox, Vancouver Island. (*Macoun*.) On rocks, Alert Bay, Vancouver Island. (*Dawson*.)

(779.) **E. Oreganum**, (Sulliv.) Lesq. & James.

Hypnum Oreganum, Sulliv.; Lesq. & James, Mosses of N. America, 355;
Canadian Musci, No. 298.

British Columbia, near the 49th parallel. (*Lyall*.) Vancouver Island. (*Wood*.) Very abundant on logs and the bases of trees around Victoria, Vancouver Island. (*Macoun*.) Melaspina Inlet, Gulf of Georgia, B.C. (*Dawson*.)

(780.) **E. (Brachythecium?) semiasperum**, C. M. & Kindb.
(n. sp.); Canadian Musci, No. 507.

Plant loosely tufted, green. Secondary stems sparingly radiculose, branching at one side; branches generally simple, acute, 1 cm. long or shorter. Leaves subpatent, from a broad-cordate base, fine acuminate, decurrent, nearly entire; alar cells numerous, reaching to the costa; the other cells narrower, the lower dilated; costa vanishing above the middle. Capsule small, suboval, erect or inclined; teeth papillose above; segments shorter than the high basilar membrane; lid narrow, short-rostellate; pedicel rough at least to the middle, smooth below, 0.6 cm. long. Perichetial leaves suboblong, short-acuminate, erect, entire and nerveless. Monœcious.

The species is well-distinct from all our *Eurhynchia* and rather allied to *Brachythecium plumosum*.

On rocks in a small mountain brook at Deer Park, Lower Arrow Lake, Columbia River, B.C., June 6th, 1890. (*Macoun*.)

(781.) **E. crassinerve**, (Tayl.) Schimp. var. **laxorete**, Kindb.
n. var. (n. sp. ?)

Differs in the leaves being nearly entire or faintly denticulate above, shorter-acuminate, and the cells larger. Only male flowers found.

The allied *E. colpophyllum*, (Sulliv.) Lesq. & James, is described as

having "the leaves scarious with a shorter blunt point, the costa not thick, and the areolation longer and narrower."

On earth in woods at Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

123. RAPHDOSTEGIUM, Lesq. & James.

(782.) **R. recurvans**, (Schwaegr.) Lesq. & James.

Hypnum recurvans, Schwaegr.; Lesq. & James, Mosses of N. America, 356;
Canadian Musci, No. 299.

H. demissum, Canadian Musci, No. 443.

Miquelon Island. (*Delémare.*) Abundant at Placentia Bay and Heart's Delight, Bay Bull Arm and Hopewell Bay, Newfoundland. (*Rev. A. Waghorne.*) Kent Co., N.B. (*Fowler's Cat.*) Abundant on trees at Ottawa, Carleton Place, Belleville, Sudbury Junction, and on roots of trees, Dawson Route, west of Lake Superior, Ont.; on trees at Gilmour's Park, Chelsea, Que., and on old logs in Dow's swamp and at Rockcliffe, near Ottawa; on bases of trees at Revelstoke, B.C. (*Macoun.*) In woods at London, Ont. (*J. Dearness.*)

(783.) **R. demissum**, (Wils.) Lesq. & James.

Hypnum demissum, Wils.; Lesq. & James, Mosses of N. America, 355.

On stones at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

(784.) **R. subdemissum**, Kindb. (n.sp.)

Differs from *R. demissum* in the branches being cuspidate, sub-julaceous, leaves smaller, long-subulate, not, or indistinctly, recurved on the borders, inflorescence dicecious.

On rocks, Kodiak Island, Alaska, September 22nd, 1891. (*J. M. Macoun.*)

(785.) **R. cylindricarpum**, (C. Muell.) Lesq. & James.

Hypnum cylindricarpum, C. Muell.; Lesq. & James, Mosses of N. America, 356.

On decayed logs at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Rather common at New Harbor, Heart's Delight Cove, and Placentia Bay, Newfoundland; on rocks, Battle Harbor, Labrador. (*Rev. A. Waghorne.*)

- (786.) **R. Jamesii**, (Sulliv.) Lesq. & James.

Hypnum Jamesii, Lesq. & James, Mosses of N. America, 357.
Isoetecium (?) *Dawsoni*, Kindb. Ott. Nat. IV., 65.

On stones, New Harbor, Newfoundland. (*Rev. A. Waghorne*.)
Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On stones along Gunn
River, Anticosti; on logs at Albert Cañon, Illicillewaet River, B.C.
(*Macoun*.)

- (787.) **R. Roellii**, Ren. & Card.; Canadian Musci, No. 444.

On rotten logs, in thin mats, in woods at Agassiz, B.C. (*Macoun*.)

- (788.) **R. subadnatum**, C. M. & Kindb. (n. sp.)

Tufts green, intricate. Branches short, subjulaceous. Leaves close,
incurved at the apex, ovate, oblong, denticulate to the middle, reflexed,
at the margins below; inner cells sub-oblong, the alar and marginal
quadrate, not vesiculose or yellow; costa short and double. Periche-
tial leaves larger and longer, appressed, a little longer acuminate.
Capsule cylindric, curved, very much narrower than the rostrate lid;
pedicel arcuate or flexuous. Probably monœcious.

This species differs from *Raphidostegium microcarpum* in the laxer
areolation of the smaller, distinctly denticulate leaves, the capsule
more than doubly longer, the large lid and the arcuate pedicel, &c.

On trees in woods at London, Ont., May, 1889. (*J. Dearness*.) On
bark of trees at Fox River, Gaspé coast, Que., August 2nd, 1882.
(*Macoun*.)

- (789.) **R. microcarpum**, (C. Muell.) Lesq. & James.

H. microcarpum, C. Muell.; Lesq. & James, Mosses of N. America, 357.

On rocks at Hastings, Burrard Inlet, B.C. (*Macoun*.) Newfound-
land. (*La Pylaie*, C. Muell. Syn. 327.)

124. *Rhynchostegium*, Schimp.

- (790.) **R. deplanatum**, Schimp., MS.

Hypnum deplanatum, Schimp., MS.; Lesq. & James, Mosses of N. America,
359; Canadian Musci, No. 300.

On flat stones in McKay's woods at Ottawa; quite common at
Wooler in shady woods, also at Carleton Place, and on flat limestone
at Owen Sound, Ont.; on rotten wood, Nepigon River, Ont.; on stones
along Red Deer River, north-west of Lake Winnipegosis, Man.
(*Macoun*.)

(791.) **R. serrulatum**, (Hedw.) Lesq. & James.

Hypnum serrulatum, Hedw. ; Lesq. & James, Mosses of N. America, 359 ;
Canadian Musci, No. 456.

Bay Bull Arm, Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*)
Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rotten wood, Bass
River, N.B. (*Fowler's Cat.*) On earth in woods at Ottawa ; also on
earth in woods at Leamington, Ont. ; on old logs at Revelstoke,
Agassiz and Hastings, B.C. (*Macoun.*)

(792.) **R. rusciforme**, (Weis) Schimp.

Hypnum rusciforme, Weis ; Lesq. & James, Mosses of N. America, 359 ;
Canadian Musci, No. 301.

Blaketown and Green Harbor, Newfoundland. (*Rev. A. Waghorne.*)
On rocks, St. John River, N.B. (*Fowler's Cat.*) On stones in Tobique
River, N.B. (*Hay.*) On rocks, Never's Rapids, York Co., N.B. (*J.*
Moser.) On stones in a brook, Pirate's Cove, Straits of Canso, N.S. ;
abundant on stones in the brook that discharges Kingsmere, four miles
from Chelsea, Que. ; on rocks at Elliott's Falls, Gull River, Victoria, Co. ;
abundant in the rivers around Owen Sound, Ont. ; Somas River,
Alberni and in Comox River, Vancouver Island ; on stones in Eagle
River, below Griffin Lake, B.C. (*Macoun.*)

125. THAMNIUM, Schimp.(793.) **T. Alleghaniense**, (C. Muell.) Bruch & Schimp.

Hypnum Alleghaniense, C. Muell. ; Lesq. & James, Mosses of N. America,
362 ; Canadian Musci, No. 302.

In crevices of thick-bedded limestone rocks near McKay's Lake,
Ottawa ; on rocks along the Sydenham River, below Jones Falls,
near Owen Sound, Ont. ; on rocks at Beaver Creek bridge over the
Hastings Road, Hastings Co., Ont. ; also on rocks at Pirate's Cove,
Straits of Canso, N.S. (*Macoun.*)

(794.) **T. alopecurum**, (Linn.) Schimp.

Hypnum neckeroides, Hook. ; Canadian Musci, No. 445.

Under overhanging rocks in cliffs along the Columbia River above
Revelstoke, B.C. ; crevices of damp overhanging rocks along the
Canadian Pacific Railway, one mile east of Agassiz, B.C. (*Macoun.*)

(795.) **T. Bigelowii**, (Sulliv.)

Hypnum Bigelowii, Sulliv.; Lesq. & James, Mosses of N. America, 362;
Canadian Musci, No. 303.

North-west Coast. (*Menzies*.) On wet rocks Goldstream, near Victoria, and along the Nantimo River, below the railway bridge, Vancouver Island. (*Macoun*.) On wet rocks, Alert Bay, Vancouver Island. (*Dawson*.)

126. PLACIOTHECIUM, Schimp.(796.) **P. Passaicense**, Aust. Bull. Torr. Bot. Club, V. 24.

Hypnum latebricola, Canadian Musci, No. 304.

H. Passaicense, Lesq. & James, Mosses of N. America, 363.

On cedar trees in Dow's swamp near Ottawa; abundant on old cedar stumps in swamps five miles west of Belleville, Ont.; on dead wood in swamps at Fort McLeod, lat. 65°, B.C. (*Macoun*.)

(797.) **P. latebricola**, Bruch & Schimp. Bryol. Europ.

Hypnum latebricola, Lindb. Ms.; Lesq. & James, Mosses of N. America, 363.

On stumps in McKay's woods, near the lake, Ottawa, Ont. (*Macoun*.)

(798.) **P. pseudo-latebricola**, Kindb. (n. sp.)

Tufts dense and radiculose, glossy green. Stem irregularly branching; branches often curved, perfectly complanate, branchlets longer with smaller and narrower leaves. Stem-leaves small, distichous, not decurrent, shortly ovate-lanceolate suddenly tapering to a somewhat long, filiform and straight point, entire; cells narrow, the alar small, few and subquadrate, often wanting; costa obsolete. Perichetial leaves sinuate above. Capsule obovate-oblong, oblique and faintly curved, often pendent, teeth pale; inner membrane clavate; cilia long, subappendiculate; lid conical; pedicel about 12 mm. long. Dioecious. Allied to *P. Passaicense*.

On rotten wood along the Columbia River, on both sides of the river at Revelstoke, May 3rd and 12th, 1890. (*Macoun*.)

(799.) **P. bifariellum**, Kindb. Bull. Torr. Bot. Club, XVII. 279.

P. Americanum. Kindb. enum. bryin. exotic.

Plants small, sparingly radiculose, loosely caespitose, dark or blackish green, not glossy. Stems rigid, pinnate. Leaves loose, small, spreading, smooth and not striate; stem-leaves at the base broadly ovate-

cordate, decurrent, serrulate all around, abruptly attenuate to the filiform, hooked-deflexed and sub-entire acumen; cells narrow, linear, the basal oblong; costa obsolete or reaching to the middle. Diccious.

This species is still doubtful, as it is found only in a barren state. It resembles rather a *Brachythecium*.

Wet places in woods at Comox, Vancouver Island, May 3rd, 1887. (*Macoun.*)

(800.) **P. trichophorum**, (Spruce) Lesq. & James.

Hypnum trichophorum, Spruce; Lesq. & James, Mosses of N. America, 364; Canadian Musci, No. 305.

H. denticulatum var. *Donianum*, Drumm. Musc. Bor.-Am., No. 165.

H. pulchellum, Canadian Musci, No. 306, in part.

Rocks of the Portage River, Rocky Mountains. (*Drummond.*) On wet rocks in Roger's Pass, Selkirk Mountains; on stones in a brook at Revelstoke, Columbia River, and at Yale, B.C.; on damp rocks, Mount Benson, Vancouver Island. (*Macoun.*)

(801.) **P. pulchellum**, (Dicks.) Bruch & Schimp. Bryol. Europ.

Hypnum pulchellum, Dicks.; Lesq. & James, Mosses of N. America, 364; Canadian Musci, No. 306, in part; Drumm. Musc. Bor.-Am., No. 167.

Banks of a stream, among the Rocky Mountains. (*Drummond.*) With *Ulota crispa* on trees at Trinity Bay, Newfoundland. (*Rev. A. Waghorne.*) On rotten wood at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On roots of trees and rocks along the Gaspé coast; on roots of spruce trees in woods around Lake Nepigon, Ont.; on stumps and rocks at Kicking Horse Lake and Lake Louise, Rocky Mountains; on rocks, Roger's Pass, Selkirk Mountains, B.C.; on earth near McLeod's Lake, lat. 55°, B.C. (*Macoun.*) On dead wood, Athabasca River, N.W.T.; St. Paul and Ounalaska islands, Behring Sea. 1891. (*J. M. Macoun.*)

Var. **nitidulum**, Lesq. & James; Canadian Musci, No. 307.

On roots of trees, Jupiter River, Anticosti; on the bases of trees, Gaspé Co., Que.; on earth, Kiladar, Addington Co., Ont.; on earth at Belleville, Ont.; also on earth at Current River, near Port Arthur, Lake Superior. (*Macoun.*) Greenland, (*Fl. Gr.*)

(802.) **P. geminum**, (Mitt.) Lesq. & James.

Hypnum geminum, Lesq. & James, Mosses of N. America, 365.

Rocky Mountains, alt. 7,000—8,000 feet, associated with *P. pulchellum*. (*Lyll.*)

(804.) **P. Silesiacum**, (Selig.) Schimp.

Hopewell Bay and Topsail Harbor, Newfoundland. (Rev. A. Waghorne.) Canaan Forks, Queen's Co., N.B. (J. Moser.)

(805.) **P. turfaceum**, Lindb. Faun. Flor. Fenn. IX. 33.

Hypnum turfaceum, Lindb. ; Lesq. & James, Mosses of N. America, 366 ; Canadian Musci, No. 308.

Miquelon Island. (*Delàmare.*) On stumps at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Pictou Co., N.S. (*McKay.*) On stumps at Bass River, and Grand Lake, N.B. (*Fowler's Cat.*) Roots of trees, McNab's Island, Halifax Harbor, and on earth, Pirate's Cove, Straits of Canso, N.S. ; on stumps, Gunn River, Anticosti ; on old stumps at Hunter's River, Brackley Point, and Otter Pond, Prince Edward Island ; on dead wood, Gaspé coast, and stumps, Ste. Anne des Monts River, Gaspé Co., Que. ; on rotten stumps at Chelsea, Que. ; common on stumps in Dow's swamp, Ottawa ; on stumps at Carleton Place, Belleville, Wooler, Owen Sound, and Lake Nepigon, Ont. ; dead wood along Lake Winnipegoosis, Man. ; on logs, Deer Park, Lower Arrow Lake, Columbia River, B.C. ; and on rotten wood, Lake Athabasca, N.W.T. (*Macoun.*) Observation Point, Lake Winnipeg. (*J. M. Macoun.*) In cedar and tamarac swamps at London, Ont. (*J. Dearness.*)

(806.) **P. elegans**, (Hook.) Schimp.

Hypnum elegans, Hook. ; Lesq. & James, Mosses of N. America, 366 ; Canadian Musci, No. 309.

Pictou Co., N.S. (*McKay.*) Miquelon Island. (*Delàmare.*) Bay Bull Arm, Placentia Bay, Hopewell Bay and New Harbor, Newfoundland ; Little Bay Islands, Labrador. (Rev. A. Waghorne.) In a coniferous swamp at London, Ont. (*J. Dearness.*) On rocks, Salt Lake, Anticosti ; on old logs at Belleville, Ont. ; on rocks at Lake Nepigon, Ont. ; on earth at Revelstoke, Columbia River ; on rocks at Sicamous and on old logs and stumps at Hastings, Burrard Inlet, B.C. ; on rotten wood at Comox, Vancouver Island. (*Macoun.*) Crevices of shaded rocks, Vancouver Island. (*Menzies.*)

(807.) **P. Muehlenbeckii**, Bruch & Schimp. Bryol. Europ.

Hypnum Muehlenbeckii, Spruce ; Lesq. & James, Mosses of N. America, 370.

Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) On old logs, Bay Bull Arm, Placentia Bay, Newfoundland ; Cape Charles

and Battle Harbor, Labrador. (*Rev. A. Waghorne.*) On old logs, Bass River, and St. John, N.B. (*Fowler's Cat.*) On dead wood, Tobique River, and at Norton, N.B. (*Hay.*) Old logs, Jupiter River, Anticosti; on rotten logs in shady woods in Hastings Co., near Belleville, and in Brighton, Northumberland Co., Ont. (*Macoun.*) Greenland. (*Fl. Gr.*)

(808.) **P. denticulatum**, (Linn.) Bruch & Schimp. Bryol. Europ.

Hypnum denticulatum, Linn.; Lesq. & James, Mosses of N. America, 367; Canadian Musci, No. 310; Drumm. Musc. Bor.-Am., Nos. 164 and 166.

Upon rocks on the descent of "la grande Côte," in the Rocky Mountains, to the west of the "Height of Land." (*Drummond.*) Pictou Co., N.S. (*McKay.*) Miquelon Island. (*Delàmare.*) Cape Charles, Battle Harbor and Deep Water Creek, Labrador. (*Rev. A. Waghorne.*) Bass River, N.B. (*Fowler's Cat.*) Highland Park, N.B. (*Hay.*) On earth at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Bases of trees, Pirate's Cove, Straits of Canso, N.S.; Why-cocogmah, Cape Breton; on damp earth and rotten wood, Hunter's River and Brackley Point, Prince Edward Island; on roots of trees in woods, Jupiter River, Anticosti; bases of trees, Gaspé Co., Que.; on bases of trees in McKay's woods, Ottawa; in woods at Britannia, six miles west of Ottawa; on roots of trees, Wooler, Ont.; on earth, Lake Nepigon, Ont.; on the roots of trees, Dawson Route, west of Lake Superior; on damp rocks, and old logs, Roger's Pass, Selkirk Mountains; on earth in bogs, McLeod's Lake, B.C., lat. 55°; on the bases of trees, Deer Park, Lower Arrow Lake; on rotten wood at Hastings, B.C.; wet earth at Victoria, on Mount Arrowsmith, and at Comox, Vancouver Island. (*Macoun.*) In woods at London, Ont. (*J. Dearness.*) Sitka. (*Roth. Alask.*) Greenland. (*Fl. Gr.*) Sitka and Kodiak Island, Alaska, 1891. (*J. M. Macoun.*)

Var. **lætum**, Lesq. & James; Canadian Musci, No. 311.

On the face of perpendicular rocks, six miles north of Otter Head, Lake Superior; on rocks, Lake Nipissing and Lake Nepigon, Ont.; on rocks, near McLeod Lake, B.C., lat. 55. (*Macoun.*)

Var. **squarrosus**, Kindb. Bull. Torr. Bot. Club XVII., 279.

This is a distinct variety presenting a squarrose appearance when dry.

On earth at Hastings, Burrard Inlet, B.C., April 27th, 1889. (*Macoun.*) Attu Island, Behring Sea, 1891. (*J. M. Macoun.*)

(809.) **P. sylvaticum**, Bruch & Schimp. Bryol. Europ.

Hypnum sylvaticum, Huds.; Lesq. & James, Mosses of N. America, 368;
Canadian Musci, No. 313.

Vicinity of Quebec. (*St. Cyr.*) On earth at Fredericton, N.B. (*Fowler's Cat.*) On earth at Hunter's River, Prince Edward Island; on earth by streams, Gaspé Co., Que.; on earth in damp woods near Belleville and in Dow's swamp, and at Britannia, six miles west of Ottawa; on earth along Lake Nepigon, Ont.; on rocks in Roger's Pass, Selkirk Mountains, B.C.; on stones, mountains north of Griffin Lake, Gold Range, B.C.; on earth at Yale, B.C. (*Macoun.*) Near London, Ont. (*J. Dearness*)

(810.) **P. Sullivantiæ**, Schimp. in Bryol. Europ.

Hypnum Sullivantii, Schimp. Ms.; Lesq. & James, Mosses of N. America, 368; Canadian Musci, No. 312.

H. silesianum, Drumm. Musc. Bor.-Am., No. 168.

Shady and rocky places; not rare. (*Drummond.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks at Truro, N.S. (*Fowler's Cat.*) Miquelon Island. (*Delimare.*) New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On earth by brooks, Truro, N.S.; on earth at Campbellton, N.B.; on earth in woods east of Belleville, and on rocks at Leamington, Port Dover, Owen Sound and Lake Nepigon, Ont.; on wood, Asulean Glacier, Selkirk Mountains. (*Macoun.*) In woods at London, Ont. (*J. Dearness.*)

(811.) **P. membranosum**, Kindb. (n. sp.)

Rhynchostegium (?) *aneuron*, Kindb. Ott. Nat. IV., 65.

Tufts dense, green and glossy. Leaves distichous, crowded and patent, flat, ovate-oblong, acute or short-acuminate, entire or denticulate above the middle, decurrent; cells very long and narrow, the alar large, hyaline and subquadrate; costa none or obsolete. Capsule cylindric-obovate, horizontally curved; teeth yellow; pedicel smooth, 2 cm. long; lid unknown. Probably dioecious.

On dead wood in Dow's swamp, near Ottawa, October 17th, 1884; on old logs at Belleville, Ont., June 19th, 1874. (*Macoun.*)

(812.) **P. brevipungens**, Kindb.

P. auriculatum, Kindb. MS.

Brachythecium brevinerve, Kindb. enum. bryin. exotic.

Tufts dense, dark green. Stems prostrate, irregularly pinnate; branches attenuate. Leaves crowded, scarcely decurrent, ovate-oblong,

acute or short-pointed, auricled, not plicate nor reflexed on the borders, entire or slightly denticulate at the apex; upper cells long and narrow, the alar very distinct, quadrate, inflate and hyaline; costa very short thick and simple, or none. Capsule curved; lid short, conical; pedicel smooth. Monœcious.

Differs from *P. denticulatum* principally in the smaller crowded leaves and their areolation.

On stones in McKay's woods, Ottawa, Ont., May 21st, 1885. (*Macoun.*)

(813.) ***P. aciculari-pungens***, C. M. & Kindb. (n. sp.)

Dicœcious. Tufts dense, radiculose, depressed, glossy green. Stem irregularly divided; branches few and short, not attenuate. Leaves concave, open-erect or patent, decurrent, entire, ovate-oblong with a short needle-shaped, recurved or patent point; margins narrowly recurved below to the middle at one side; areolation uniform and dilated; the angular cells large and not numerous, sub-rectangular; costa none or indistinct. Capsules not found. Habit of *Plagiothecium Sullivantiae*.

This species is nearly allied to *Plagiothecium sylvaticum*, but the leaves are smaller, the tufts more compact, &c.

On earth, Canaan Forks, Queen's Co., N.B., 1889. (*J. Moser.*)

(814.) ***P. undulatum***, Bruch & Schimp. Bryol. Europ.

Hypnum undulatum, Linn.; Lesq. & James, Mosses of N. America, 369; Canadian Musci, No. 314.

Abundant on logs in woods at Hastings, B.C.; also common at Comox, Vancouver Island. (*Macoun.*) On logs, Queen Charlotte Islands; also on logs, Battledown Island, Gulf of Georgia, B.C. (*Dawson.*) Sitka. (*Roth. Alask.*) Sitka and Prince of Wales Island, Alaska, 1891. (*J. M. Macoun.*)

127. AMBLYSTECIUM, Schimp.

(815.) ***A. minutissimum***, (Sulliv. & Lesq.)

Hypnum minutissimum, Sulliv. & Lesq.; Lesq. & James, Mosses of N. America, 371; Canadian Musci, No. 541.

On rocks, North Hastings, Ont.; on earth at the outlet of Lake Louise, Rocky Mountains; also on earth at Revelstoke, Columbia River, B.C. (*Macoun.*)

(816.) **A. Sprucei**, Bruch & Schimp. Bryol. Europ.

Hypnum Sprucei, Bruch & Schimp Ms.; Lesq. & James, Mosses of N. America, 372; Canadian Musci, No. 315.

H. confervoides, Drumm. Musc. Bor.-Am., No. 100.

Shady banks among the Rocky Mountains. (*Drummond*.) On earth, Mount Albert, Gaspé Co., Que.; on trees in Dow's swamp near Ottawa; on old stumps in Brighton, Ont.; on old stumps at Hudson Hope, Peace River, lat. 56°; on bases of stumps and on earth under rocks at Hector, and on old stumps, Lake Louise, Rocky Mountains; on earth in woods at Revelstoke, Columbia River, B.C.; on stumps at Lytton, B.C.; and on stumps at Nanaimo, Vancouver Island; on stumps near Lesser Slave Lake, N.W.T. (*Macoun*.) Greenland. (*Fl. Gr.*)

(817.) **A. speirophyllum**, Kindb. Ott. Nat. IV., 64.

Plants loosely caespitose, dark-green. Stem capillary, irregularly ramulose, not or sparingly radiculose. Leaves small, long-distant, spreading, subcordate or oval-oblong, blunt or sub-acute, entire or denticulate; cells short; costa sub-percurrent, broad, sometimes very distinct. Barren. Probably dioecious. Habit of *Amblystegium Sprucei*.

On rocks at Canaan Forks, Queen's Co., N.E., November, 1889. (*J. Moser*.)

(818.) **A. fenestratum**, Kindb.

A. tenuifolium, Kindb. Ott. Nat. IV., 65.

Plants loosely coherent, green; stems capillary, irregularly ramulose. Leaves small, spreading, very narrow, ovate-lanceolate, acute, denticulate; cells dilated but elongate; costa more or less distinct. Barren. Habit of *Amblystegium Sprucei*.

On the borders of a pond near London, Ont., June, 1889. (*J. Dearness*.)

(819.) **A. subtile**, Bruch & Schimp. Bryol. Europ.

Hypnum subtile, Hoffm.; Lesq. & James, Mosses of N. America, 372; Canadian Musci, No. 316; Drumm. Musc. Bor.-Am., No. 227.

On the roots of trees in Upper Canada (Ontario); at Holland Landing, &c. (*Drummond*.) On the bases of trees in McKay's woods and Dow's swamp, Ottawa; very abundant also on trees at Owen Sound, Ont. (*Macoun*.)

(820.) **A. confervoides**, Bruch & Schimp. Bryol. Europ.

Hypnum confervoides, Brid.; Lesq. & James, Mosses of N. America, 372;
Canadian Musci, No. 317.

On stones in woods, Canaan Forks, Queen's Co., N.B. (*J. Moser.*)
On flat limestone rocks in McKay's woods and in woods west of
Ottawa; on limestone boulders in woods around Belleville, Ont.; on
flat limestone rocks in woods at Owen Sound, Ont.; also on limestone
rocks at Hector, Rocky Mountains. (*Macoun.*)

(821.) **A. Yuratzkæ**, Schimp. Synops. ed. 1.

Hypnum Yuratzkæ, Canadian Musci, No. 466.

On dead wood, stones and bases of trees in damp woods around
Ottawa; also on the bases of trees in woods at Owen Sound, Ont.;
on old logs west of Revelstoke, B.C. (*Macoun.*)

(822.) **A. serpens**, Bruch & Schimp., Bryol. Europ.

Hypnum serpens, Linn.; Lesq. & James, Mosses of N. America, 373;
Canadian Musci, No. 318; Drumm. Musc. Bor.-Am., No. 187.

Roots of trees in shady situations. (*Drummond.*) On earth at the
bases of trees at Bass River and Fredericton, N.B. (*Fowler's Cat.*)
On earth in woods, Canaan Forks, Queen's Co., N.B. (*J. Moser.*)
Miquelon Island. (*Delamare.*) Vicinity of Quebec. (*St. Cyr.*) Battle
Harbor, Labrador. (*Rev. A. Waghorne.*) Decayed wood, South-west
Point, Anticosti; on earth, Brackley Point, Prince Edward Island;
on earth in woods at Ottawa, Belleville, Wooler, Niagara Falls and
Owen Sound, Ont.; on roots of trees, Moose Mountain, Assiniboia;
on earth at Hudson Hope, Peace River, lat. 56°; abundant at the
bases of trees north of Edmonton, N.W.T.; on earth at Quesnel,
Spence's Bridge, Sicamous, Kamloops and Agassiz, B.C.; on earth at
Cedar Hill, near Victoria, Vancouver Island. (*Macoun.*) Near Dor-
chester, Middlesex Co., Ont. (*J. Dearness.*) Greenland. (*Fl. Gr.*)

Var. **xanthodictyon**, Kindb. (n. var.)

(*A. serpens* * *lutescens*, Kindb. MS.)

Tufts loose, yellow-brown. Stem pinnate. Leaves, from an ovate-
oblong base, acuminate, denticulate or entire; the alar and often also the
lower basal cells quadrate, yellowish, the other oblong except the inner,
sublinear near the costa and in the acumen. Perichetial leaves very
small, nerveless.

Although the areolation of the leaves differs very much from the

commoner forms of *Amblystegium serpens*, we dare not propose the present as a distinct species.

On stones along St. Mary's River, Anticosti, August 29th, 1883. (Macoun.)

(823.) **A. porphyrrhizum**, (Lindb.) Schimp. Synops. muscor. Euro.

Hypnum porphyrrhizum, Canadian Musci, No. 319.

H. radicale, Lesq. & James, Mosses of N. America, 373, in part; Drumm. Musc. Bor.-Am., No. 189.

On decaying trees. (Drummond.) Fredericton, N.B. (Fowler's Cat.) On damp earth, Tobique River, N.B. (Hay.) Never's Rapids and Canaan Forks, Queen's Co., N.B. (J. Moser.) Miquelon Island. (Delàmare.) Fox Harbor, Labrador. (Rev. A. Waghorne.) On wet earth and stones, Brackley Point, Prince Edward Island; decayed wood, Pictou, N.S.; wet ground at Campbellton, N.B.; on wet rocks, South-west Point, Anticosti; on stones in woods at Ottawa, also at Carleton Place, Brighton, Belleville and Owen Sound, Ont.; on damp ground, Manitoba House, Lake Manitoba, Man.; on wet logs and rocks at Morley and at Lake Louise, Rocky Mountains; on earth along Lesser Slave Lake, N.W.T. (Macoun.) Saskatchewan; and by the Assiniboine at Fort Ellice. (Bourgeau.) Pack River, Galton Mountains, B.C. (Lyll.) At London, Ont. (J. Dearness.)

(824.) **A. varium**, (Hedw.) Lindb.

Hypnum radicale, Lesq. & James, Mosses of N. America, 373, in part; Canadian Musci, No. 320.

Near Fredericton, N.B. (Prof. Fowler.) Miquelon Island. (Delàmare.) On roots of trees, Canaan Forks, Queen's Co., N.B. (J. Moser.) On earth at Brackley Point, Prince Edward Island; roots of trees, Gunn River, Anticosti; on stones in McKay's woods, Ottawa; damp ground, Pipestone Creek, and along Lake Winnipegosis, Man. (Macoun.) Saskatchewan. (Bourgeau.) Pend d'Oreille River, B.C. (Lyll.)

(825.) **A. orthocladon**, (Beauv.) Lesq. & James.

Hypnum orthocladon, Beauv.; Lesq. & James, Mosses of N. America, 374; Canadian Musci, No. 337, in part.

On stones in brooks at Belleville, Ont.; also in brooks and larger streams around Owen Sound, Ont. (Macoun.) Kent Co., N.B. (Fowler's Cat.) (Pictou Co., N.S. (McKay.) ?)

(826.) **A. irriguum**, (Wils.) Bruch & Schimp. Bryol. Europ.*Hypnum irriguum*, Lesq. & James, Mosses of N. America, 374.

On wet limestone rocks along the Moira River at Belleville, July 11th, 1878. (*Macoun.*)

Var. **spinifolium**, Lesq. & James; Canadian Musci, No. 321.

On boulders in the Kaministiquia River, below Kakabeka Falls, west of Lake Superior. (*Macoun.*)

(827.) **A. fluviatile**, Bruch & Schimp. Bryol. Europ. t. 567.

Hypnum fluviatile, Swartz; Lesq. & James, Mosses of N. America, 375; Canadian Musci, No. 446.

On stones in brooks, Queen's Co., N.B. (*J. Moser.*) On rocks, St. John River, Fredericton, N.B. (*Prof. Fowler.*) Blaketown Harbor, Newfoundland. (*Rev. A. Waghorne.*) On rocks in the brook that discharges Kingsmere four miles west of Chelsea, Que.; on rocks in the Sydenham and other rivers around Owen Sound, Ont. (*Macoun.*) On stones in brooks near London, Ont. (*J. Dearness.*) Near Owen Sound, Ont. (*Mrs. Roy.*) On rocks at Kingston, Ont. (*Prof. Fowler.*)

(828.) **A. curvipes**, Guemb., Bryol. Europ.

On earth in Dow's Swamp, near Ottawa; on logs, Huntingdon, North Hastings, Ont., July 19th, 1868. (*Macoun.*)

(829.) **A. adnatum**, (Hedw.) Lesq. & James.

Hypnum adnatum, Hedw.; Lesq. & James, Mosses of N. America, 375; Canadian Musci, No. 322, in part.

Hypnum adnatum var., Canadian Musci, No. 323.

On stones in woods, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On flat stones in McKay's Woods, near Ottawa; also abundant in woods at Brighton, Wooler, Belleville and Owen Sound, Ont.; at Lake Agnes, Rocky Mountains. (*Macoun.*) On stones at Delaware and London, Ont. (*J. Dearness.*)

(830.) **A. dissitifolium**, Kindb. (n. sp.)

Tufts compact, sparingly radicant, green, not glossy. Leaves very loosely disposed, long-decurrent, ovate-oblong, short-acuminate, denticulate all around; areolation loose, the upper cells narrower; the alar larger, quadrate and well distinct, as chlorophyllose as the other cells; costa percurrent. Inflorescence probably diœcious; only male flowers

found. This species is nearly allied to *Amblystegium compactum*, which grows chiefly on decayed wood.

On flat limestone rocks which receive the dripping of water at the falls on the rivers, flowing into the head of Owen Sound Bay; in similar situations near the Whirlpool, Niagara Falls, September 24th, 1890. (*Macoun.*)

(831.) **A. compactum**, (C. Muell.) Bruch & Schimp.

Hypnum compactum, C. Muell.; Lesq. & James, Mosses of N. America, 375.

H. serpens var. *compactum*, Drumm. Musc. Bor.-Am., No. 188.

On the ground in moist places. (*Drummond.*) On the bases of trees, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Bay Bull Arm, Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*) On decayed wood in a swamp at Carleton Place, Ont.; on rocks at Colpoy's Bay, Lake Huron; on rocks, on islands in Lake Nepigon, Ont.; on the tufa mounds at Banff, Rocky Mountains. (*Macoun.*)

(832.) **A. subcompactum**, C. M. & Kindb. (n. sp.)

Hypnum compactum, Canadian Musci, No. 324.

Differs from *Amblystegium compactum* (Drummond, No. 188) in the stems being thicker, the leaves larger and longer, also in the asymmetric capsule, curved in the younger state, at least doubly greater. The British Columbian specimens have a peculiar habit; the tufts are decolorate below, bright green above, the stems are erect, about 2 cm. high.

Growing in thick tufts at the bases of trees around springs and the margins of bogs at Spence's Bridge, Clinton, and along Blackwater River, B.C., June 10th, 1875; on wet rocks near the Whirlpool, Niagara Falls. (*Macoun.*)

(833.) **A. riparium**, (Linn.) Bruch & Schimp. Bryol. Europ.

Hypnum riparium, Linn.; Lesq. & James, Mosses of N. America, 376;

Canadian Musci, No. 325; Drumm. Musc. Bor.-Am., No. 170.

H. uncinatum var. *plumosum*, Canadian Musci, No. 374.

About the roots of trees in swamps. (*Drummond.*) Saskatchewan and Rocky Mountains. (*Bourgeau.*) On stones in brooks, Molus River, N.B. (*Fowler's Cat.*) On Kennebecasis Island, N.B. (*Hay.*) Wet places, Norman's Cove, Newfoundland. (*Rev. A. Waghorne.*) On sticks and roots of trees in pools, at Ottawa; on stones in brooks and on rocks and logs in the Moira at Belleville, Ont.; abundant on stones in the rivers and brooks around Owen Sound, and at Red Rock, Lake

Superior, Ont. ; in mud at Swan Lake House, Man. ; on sticks in pools, Cypress Hills, Alberta ; boggy pools, Cave and Basin, Banff, Rocky Mountains ; in pools in woods, Lesser Slave Lake, N.W.T. ; at Quesnel and Blackwater River, B.C. ; on sticks in ponds at Comox, Cedar Hill and Victoria, Vancouver Island. (*Macoun.*) In pools in woods near London, Ont. (*J. Dearness.*) Greenland (*Fl. Gr.*)

Var. **fluitans**, Lesq. & James ; Canadian Musci, No. 326.

Floating in water north shore of Lake Superior ; in pools, Thunder Creek, west of Moose Jaw, Assiniboia ; in pools at Revelstoke, B.C. ; also floating in water at Spence's Bridge, B.C. (*Macoun.*) In pools at London, Ont. (*J. Dearness.*)

(834.) **A. vacillans**, Sulliv.

Hypnum vacillans, Lesq. & James, Mosses of N. America, 377.

Floating in water, marshes of Bay of Quinte, Ont. (*Macoun.*) So named by C. F. Austin.

(835.) **A. distantifolium**, Kindb. (n. sp.)

Stems irregularly branching, creeping. Leaves green, distant, spreading when dry, patent when moist, long ovate-lanceolate, long-cuspidate, not or indistinctly decurrent, sharply serrulate all around, chlorophyllose ; cells wide, suboblong ; costa thick percurrent or nearly excurrent. Barren.

Differs from *A. serpens* in the leaves being longer cuspidate and the thick, very much longer costa.

On rocks, Chance Cove and New Harbor, Newfoundland, August 16th, 1890. (*Rev. A. Waghorne.*)

Obs. **A. Wollei**, (Aust.) Kindb. is.

No. 644 Leskea Wollei, Aust.

128. HYPNUM, LINN.

Subgenus I. CAMPYLUM, Linn.

(836.) **H. hispidulum**, Brid. ; Lesq. & James, Mosses of N. America, 378 ; Canadian Musci, No. 327.

Mooyie River, B.C. (*Lyall.*) Bass River, also Little Branch, Miramichi, N.B. (*Fowler's Cat.*) On the bases of trees, Canaan Forks, Queen's Co., and Elmwood, King's Co., N.B. (*J. Moser.*) On earth at

Truro, N.S.; on decayed wood at Campbellton, N.B.; roots of trees in shady woods, Gaspé Co., Que., not rare; on the bases of trees in woods around Ottawa; on earth at Carleton Place, near Ottawa; on old logs at Belleville and on the bases of trees, Brighton and Owen Sound, Ont.; on old logs at Lake Nipissing and Lake Nepigon, Ont.; decayed wood, Cypress Hills, Alberta; on earth at the bases of trees at Quesnel and Hastings, B.C. (*Macoun.*) At London, Ont. (*J. Dearness.*)

(837.) **H. byssirameum**, C. M. & Kindb. (n. sp.)

Resembling a small form of *H. Sommerfeltii*, Myr., but the leaves are denticulate all around. Barren.

On the base of a dead tree in William Valentine's woods, Brighton, Northumberland Co., Ont., October 5th, 1888. (*Macoun.*)

(838.) **H. Sommerfeltii**, Myrin; Canadian Musci, 328.

H. stellatum var. *polymorphum*, Drumm. Musc. Bor.-Am., No. 186.

On old logs, Never's Rapids, Queen's Co., N.B. (*J. Moser.*) Salmon River, Kent Co., N.B. (*Fowler's Cat.*) On logs at Belleville, Ont.; on the bases of trees at Ottawa; on the bases of trees at Leamington, Ont.; also on damp rocks at Sydenham Falls, Owen Sound, Ont.; on wet rocks, Kakabeka Falls, west of Fort William, Lake Superior; on the roots of trees along Peace River, lat. 56°; on earth along the Columbia River at Revelstoke, on logs at Quesnel, B.C.; also on mountains north of Griffin Lake and at Hastings, B.C. (*Macoun.*) In woods at Kingston, Ont. (*Prof. Fowler.*) Dripping rocks. (*Drummond.*)

(839.) **H. chrysophyllum**, Brid.; Lesq. & James, Mosses of N. America, 378; Canadian Musci, No. 329.

H. stellatum var. *chrysophyllum*, Drumm. Musc. Bor.-Am., No. 185.

About gravelly, springy places. (*Drummond.*) Bay Bull Arm, Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*) On logs, Tobique River, N.B. (*Hay.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Pictou Co., N.S. (*McKay.*) On rocks along Ste. Anne des Monts River, Gaspé Co., Que.; on roots of trees in woods at Ottawa, and Carleton Place; on old logs in wet woods east of Belleville, Ont.; on stones in woods at Owen Sound, Ont.; on rocks, Lake Nepigon, Ont.; on roots of trees, Manitoba House, Man.; damp rocks in wet woods at Morley, Rocky Mountains; in swamps at Sicamous and Port Haney, Fraser River, B.C. (*Macoun.*) Near London, Ont. (*J. Dearness.*) Saskatchewan. (*Bourgeau.*)

- (840.) **H. uncostatum**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 590.

Differs from *Hypnum chrysophyllum* in the dense tufts, the stem more irregularly branching, creeping, the leaves shorter-acuminate, the alar cells smaller, not yellow, the costa more distinct, the capsule smaller, the perichetial leaves gradually acuminate-subulate or filiform-pointed with the apices arcuate.

At Canaan Forks, Queen's Co., N.B. (*J. Moser.*) In the Mer Bleue near Ottawa, October 4th, 1890. (*Macoun.*) At Cataract, near Kingston, Ont., May 23rd, 1884. (*Prof. Fowler.*)

- (841.) **H. hispidulum**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 512.

H. Sommerfeltii, Canadian Musci, No. 328, in part.

Differs from *Hypnum chrysophyllum* in the leaves being decurrent with a broader base, borders recurved at the angles; alar cells numerous, hyaline. Barren.

Abundant on old logs in a boggy place under the trestle just east of of Albert Cañon Station, Selkirk Mountains, B.C., May 29th, 1890. (*Macoun.*) Near New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (842.) **H. Columbiæ**, Kindb.

Amblystegium serpens Columbiæ, Kindb. Bull. Torr. Bot. Club. XVII. 279.

Tufts dense. Stems short, very tomentose, irregularly branching; branches short. Leaves narrower than in *Hypnum chrysophyllum*, from the narrow-ovate base gradually tapering into the acumen; borders denticulate all around, recurved at the angles; areolation often wide, as in *Amblystegium*; costa short, reaching to the acumen or sometimes longer. Capsule generally smaller and shorter than in *H. chrysophyllum*, curved; lid short-apiculate; peristome dark-yellow, not pale; perichetial leaves short-acuminate.

Differs from *H. chrysophyllum* in the narrower, denticulate leaves, from *H. hispidulum* and *H. Sommerfeltii* in the long costa.

On wet logs near a spring about one mile from Sicamous, B.C., on the road to Enderby, July 19th, 1889. (*Macoun.*)

- (843.) **H. Macounii**, Kindb. Bull. Torr. Bot. Club, XVII., 279; Canadian Musci, No. 522.

H. Halleri, Drumm. Musc. Bor.-Am., No. 191.

Allied to *Hypnum hispidulum*. Habit of the European *H. Halleri*. Monœcious. Plants small, interlaced in dense brownish-green tufts.

Stems pinnate, prostrate, sparingly radiculose. Leaves densely crowded, squarrose-recurved, round-deltoid, short-acuminate, reflexed on the borders of the entire base to the denticulate acumen; alar cells quadrate, pellucid, not numerous, the other short-oblong or short-lanceolate; costa obsolete or none. Capsule small, narrow-cylindrical, slightly curved, annulus simple; basilar membrane low; lid convex, obtuse and not apiculate; pedicel reddish-brown, smooth, 2 c.m. long.

On earth by springs at Mount Stephen, also abundant forming thin mats on flat stones at Hector and on the slopes of Cathedral Mountain, Rocky Mountains, alt. 5,600 feet. (*Macoun.*) Rocks about the Portage River, in the Rocky Mountains. (*Drummond.*)

(844.) **H. stellatum**, Schreb.; Lesq. & James, Mosses of N. America, 379; Canadian Musci, No. 330.

Nottingham Island, Hudson Strait. (*R. Bell.*) Miquelon Island. (*Delàmare.*) New Harbor, Newfoundland, and Fox Harbor, Labrador (*Rev. A. Waghorne.*) On earth in bogs and swamps at Gunn River and Beesie River; Anticosti; on earth in a meadow, Gaspé Co., Que.; beaver meadow, Lake Nipissing; on boggy soil at Current River and Mamainse, Lake Superior; peaty meadow, Porcupine Mountains, Man.; in swamps at Morley and Stephen, Rocky Mountains; in bogs near Fort Assiniboine, Athabasca River; in a limestone spring, Sicamous, B.C.; also on the mountains north of Griffin Lake, Gold Range, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*) In swamps at London, Ont. (*J. Dearness.*)

Var. **protensum**, Bruch & Schimp.; Canadian Musci, No. 331.

In beaver meadows, Huntingdon, Hastings Co., Ont.; also in swampy meadows at Stephen and Morley, Rocky Mountains; in limestone springs, shore of Lake Mara, near Sicamous, B.C. (*Macoun.*)

Var. **subdecursivulum**, Kindb. (n. var.)

Leaves smaller, decurrent, abruptly acuminate from a short-ovate base; alar cells more numerous. Not found fruiting.

Amongst *Dicranum scoparium* on earth by springs in a swamp near Brighton, Northumberland Co., Ont., October 5th, 1888. (*Macoun.*)

(845.) **H. polygamum**, Wils.; Lesq. & James, Mosses of N. America, 379.

H. stellatum, Drumm. Musc. Bor.-Am., No. 184.

Swamps; not frequent. (*Drummond.*) In the "Big Swamp," Murray, Northumberland Co., Ont.; on earth in the valley of the Thompson

River at Kamloops, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*) Miquelon Island. (*Delamare.*) At New Harbor, White Bay and Blaketown, Newfoundland, and at Battle Harbor and Fox Harbor, Labrador. (*Rev. A. Waghorne.*) At Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

Subgenus. II. HARPIDIUM, Sulliv.

(846.) **H. Knelfii**, (Bruch & Schimp.)

Hypnum aduncum var. *Knelfii*, Schimp.; Lesq. & James, Mosses of N. America, 380; Canadian Musci, No. 333.

Hypnum aduncum, Canadian Musci, No. 332.

Battle Harbor, Labrador. (*Rev. A. Waghorne.*) In swamps, Queen's Co., N.B. (*J. Moser.*) In pools, Mount Albert, Gaspé Co., Que.; in swamps at Beechwood, and in Dow's Swamp, Ottawa; in a bog at Britannia, six miles west of Ottawa; wet springy places at Belleville and Wooler, Ont.; springs at Morley, Rocky Mountains; in swamps, Peace River, lat. 56°; in swamps at Revelstoke and at Quesnel, B.C. (*Macoun.*) Rocky Mountains. (*Lvall.*) Saskatchewan. (*Bourgeau.*) Greenland. (*Fl. Gr.*) Shore of Lake Erie, Ont. (*J. Dearness.*)

Var. **gracilescens**, Bruch & Schimp.; Canadian Musci, No. 447.

In a limestone spring at Sicamous, B.C. (*Macoun.*)

Var. **laxum**, Kindb. (n. var.)

In Dow's swamp near Ottawa, October 10th, 1884. (*Macoun.*)

Var. **rectifolium**, Kindb. (n. var.)

On damp rocks, in McKay's woods at Ottawa, August 26th, 1889. (*Macoun.*)

Var. **platyphyllum**, Kindb. (n. var.)

Leaves very broad and short-acuminate.

On damp rocks in woods at Rockcliff, near Ottawa, September 10th, 1889. (*Macoun.*)

(847.) **H. Sendtneri**, Schimp.; Lesq. & James, Mosses of N. America, 381; Canadian Musci, No. 384, in part.

Broad Cove, Newfoundland. (*Rev. A. Waghorne.*) In bogs at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) In water in Dow's swamp, near Ottawa; in water in marshes, Hastings Co., Ont.; in

bogs, Porcupine Mountains, Man.; in springs at Morley, Rocky Mountains; in limestone springs at Sicamous, B.C. (*Macoun.*)

(848.) **H. Cossoni**, Schimp.; Canadian Musci, No. 338.

H. revoleens var. *intermedium*, Lesq. & James, Mosses of N. America, 384.

H. intermedium, Lindb.

Very abundant in crevices of wet rocks along the north and east coasts of Lake Superior; around springs at Morley, and in bogs at Lake Louise, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

(849.) **H. vernicosum**, Lindb.; Lesq. & James, Mosses of N. America, 385; Canadian Musci, No. 384.

H. aduncum, Drumm. Musc. Bor.-Am., No. 201.

Common in marshes and swamps. (*Drummond.*) In bogs at Jupiter, Beesie and Gunn rivers, Anticosti; in bogs at Tignish, Prince Edward Island; bogs north of Lake Superior; bogs west of the Saskatchewan River, N.W.T.; on wet rocks and in bogs at Hector, Rocky Mountains; in bogs at Quesnel, B.C.; in bogs on Mount Benson, Vancouver Island. (*Macoun.*) Pack River, B.C. (*Lyall.*) Greenland. (*Fl. Gr.*)

(850.) **H. Wilsoni**, Schimp.

Greenland. (*Fl. Gr.*)

(851.) **H. brevifolium**, Lindb. Spitzberg. Moss. 541.

Greenland. (*Fl. Gr.*)

(852.) **H. lycopodioides**, Schwaegr.; Lesq. & James, Mosses of N. America, 385.

Greenland. (*Fl. Gr.*) Miquelon Island. (*Delàmare.*)

(853.) **H. revolvens**, Swartz; Lesq. & James, Mosses of N. America, 384; Canadian Musci, No. 387.

Battle Harbor and Squaw Island, Labrador. (*Rev. A. Waghorne.*) Cedar swamp two miles west of Ste. Anne des Monts, Gaspé Co., Que. (*J. A. Allen.*) In bogs at Salt Lake, Anticosti; swamps along Lake Nepigon; in swamps at Red Rock, Lake Superior; in a marsh at Banff, Rocky Mountains. (*Macoun.*) Alaska. (*Harrington.*) Greenland. (*Fl. Gr.*)

- (854.) **H. fluitans**, Linn. ; Lesq. & James, Mosses of N. America, 383 ; Canadian Musci, No. 336, in part.

H. fluitans var. *foliis minoribus*, Drumm. Musc. Bor.-Am., Nos. 203 and 204.

Swamps ; not uncommon at Carlton House (No. 204). Common in marshes (No. 203). (*Drummond.*) In bogs, Coldbrook, N.B. (*Hay.*) Miquelon Island. (*Delàmare.*) New Harbor, Newfoundland, and Fox Harbor, Labrador. (*Rev. A. Waghorne.*) In boggy places at Brackley Point, Prince Edward Island ; in peat bogs, North-west Arm, Halifax, N.S. ; peat bogs, Salt Lake and Beesie River, Anticosti ; in a swamp west of Hull, Que. ; boggy places, McKay's woods, Ottawa ; in pools on rocks, Michipicotin Island, Lake Superior ; in pools, in Roger's Pass, Selkirk Mountains ; also in bogs in Eagle Pass, west of Revelstoke, Columbia valley, B.C. (*Macoun.*) Peat bogs, Belvin's Lake, Que. (*D'Urban.*) Greenland. (*Fl. Gr.*)

- (855.) **H. exannulatum**. Guembel ; Lesq. & James, Mosses of N. America, 384 ; Canadian Musci, No. 382.

In boggy places, Bass River, N.B. (*Fowler's Cat.*) In swamps, Queen's Co., and Elmwood, King's Co., N.B. (*J. Moser.*) In boggy soil, Cape Chudleigh, Hudson Strait. (*R. Bell.*) Miquelon Island. (*Delàmare.*) Chance Cove, and Harbor Deep, Newfoundland ; Battle Harbor, Indian Harbor and Seal Islands, Labrador. (*Rev. A. Waghorne.*) In bog-holes and ponds, frequent, Prince Edward Island ; in pools of water, Roger's Pass, Selkirk Mountains, B.C. ; in small ponds near perpetual snow, Gold Range, north of Griffin Lake, B.C. ; common in pools at Sicamous, B.C. (*Macoun.*) North Dorchester, near London, Ont. (*J. Dearness.*) Greenland. (*Fl. Gr.*)

- (856.) **H. uncinatum**, Hedw. ; Lesq. & James, Mosses of N. America, 382 ; Canadian Musci, No. 335 ; Drumm. Musc. Bor.-Am., No. 202.

Woods and banks amongst the Rocky Mountains. (*Drummond.*) Cape Cudleigh, Hudson Strait. (*R. Bell.*) Squaw Island, Seal Islands and Battle Harbor, Labrador and New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On the ground at Bass River, Fredericton and Little Branch, Miramichi, N.B. (*Fowler's Cat.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Miquelon Island. (*Delàmare.*) River Sheldrake, Que. (*St. Cyr.*) Pictou Co., N.S. (*McKay.*) On earth at Hunter's River and Brackley Point, Prince Edward Island ; on earth at Truro, N.S. ; common in wet places, Salt Lake, Anticosti ; very common on earth, Mount Albert and other parts of Gaspé, Co.,

Que. ; common in wet woods at Beechwood, Dow's swamp and Mer Bleue, near Ottawa ; abundant throughout Ontario and at Lake Superior, Lake Nipissing and Lake Nepigon ; common in swamps at Hector and Banff, Rocky Mountains ; in Roger's Pass, Selkirk Mountains ; on earth in woods along the Columbia River at Revelstoke, also at Sicamous, and on the Gold Range at Griffin Lake and Hastings, Burrard Inlet, B.C. (*Macoun.*) Near London, Ont. (*J. Dearness.*) In bogs, Punk Island, Lake Winnipeg ; Cape Vancouver and St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*) Cascade, Galton and Rocky Mountains, B.C. (*Lyall.*) Rocky Mountains. (*Bourgeau.*) Kotzebue Sound. (*Roth. Alask.*) Greenland. (*Fl. Gr.*) Very common across the continent.

Var. **plumosum**, Schimp. ; Canadian Musci, No. 374.

On rocks, Gaspé Co., Que. ; and bases of trees, Lake Nepigon, Ont. ; along Kicking Horse Lake, Rocky Mountains. (*Macoun.*)

Var. **substriatum**, Kindb. ; Canadian Musci, No. 376.

Leaves nearly estriate.

On earth at Hunter's River, Brackley Point and Cove Head, Prince Edward Island ; on earth at Revelstoke, Columbia River, B.C. (*Macoun.*)

Var. **micropterum**, Kindb. (n. var.)

Stems nearly simple ; leaves long-cuspidate, not striate above, alar cells small ; inflorescence probably dioecious ; only female flowers found.

Battle Harbor, Labrador, August 30th, 1891. (*Rev. A. Waghorne.*)

* **H. orthothecioides**, Lindb. Spitzberg. Moss.

Amongst other mosses at Battle Harbor, Labrador. (*Rev. A. Waghorne.*)

(857.) **H. Moseri**, Kindb. Ott. Nat. IV. 65.

Differing from *H. uncinatum* in the leaves not being striate, but sometimes recurved at the base ; costa faint, often failing ; differing from all other *Harpidia* in the stem being densely radiculose.

On the bases and trunks of poplar trees in woods at Canaan Forks, Queen's Co., N.B., December 30th, 1889. (*J. Moser.*) New Harbor, Freshwater, and Chance Cove, Newfoundland. (*Rev. A. Waghorne.*)

(858.) **H. longinerve**, Kindb.

Dichelyma longinerve, Kindb., Bull. Torr. Bot. Club. XVI., 97 ; Canadian Musci, No. 391.

Habit of *Hypnum fluitans*. Stems erect, about 1 decim. high, loosely caespitose, rootless, subpinnately branching. Leaves falcate, entire the upper yellowish-green, oval-lanceolate, long-acuminate, long-pointed by the $\frac{1}{4}$ - $\frac{1}{2}$ excurrent costa ; most of the cells sub-linear, the basal numerous, in 4-6 rows, subquadrate or rectangular, the alar greater, pellucid. Flowers and capsules not seen.

Quite common on sticks in dried-up ponds, particularly behind the school-house, at Cedar Hill, near Victoria, Vancouver Island, June 23rd, 1887. (*Macoun*.)

(859.) **H. conflatum**, C. M. & Kindb. (n. sp.)

H. Sendmeri, Canadian Musci, No. 334, in part.

H. fluitans, Canadian Musci, No. 336, in part.

Allied to *Hypnum Kneiffii*. Stem slender, subfiliform, distantly pinnate, not radiculose. Leaves small, concave, distant, denticulate all around stem-leaves decurrent, from a broad-ovate base suddenly narrowed in a very short, subulate-filiform, straight point ; alar cells very large, hyaline or faintly yellowish, the other nearly uniform, oblong-lanceolate, conflant ; costa pale-yellow, vanishing in the acumen ; branch-leaves narrower, oblong-lanceolate, more or less short-acuminate, curved or straight. Capsule very small, arcuate and contracted below the mouth. Dioecious.

In a pool on the mountain between the Thompson and Nicola rivers at Spence's Bridge, B.C. ; alt. 3,000 feet, May 28th, 1889 ; also in a bog at Britannia, six miles west of Ottawa, Ont. (*Macoun*.) Battle Harbor, Labrador. (*Rev. A. Waghorne*.)

Subgenus III. CRATONEURON, Sulliv.(860.) **H. filicinum**, Linn. ; Lesq. & James, Mosses of N. America, 386 ; Canadian Musci, No. 339.

By springs, Tobique River, N.B. (*Hay*.) New Harbor and White Bay, Newfoundland. (*Rev. A. Waghorne*.) By a spring at Canaan Forks, Queen's Co., N.B. (*J. Moser*.) In limestone springs, Jupiter River, Anticosti ; by springs, at Truro, N.S. : wet limestone rocks and by springs, Gaspé Co., Que. ; by a spring along the Trent River, two miles above the railway bridge at Trenton, Ont. ; abundant on rocks below Jones Falls, at Owen Sound, Ont. ; by springs along the Atha-

basca River, Fort Assiniboine, N.W.T.; in limestone springs at Hudson Hope, Peace River, lat. 56°; on the tufa mounds and in springs at Banff, Rocky Mountains; on stones in a brook at Spence's Bridge, B.C.; and at Comox Vancouver Island. (*Macoun.*) Saskatchewan. (*Bourgeau.*) Mooyie River, B.C. (*Lyall.*) In the vicinity of London, Ont. (*J. Dearness.*)

Var. **aciculinum**, C. M. & Kindb. (n. var.)

Costa excurrent to a rigid point. On wet rocks in Eagle Pass west of Revelstoke, B.C., May 23rd, 1890. (*Macoun.*)

(861.) **H. chloropterum**, C. M. & Kindb. (n. sp.)

H. (Brachythecium) Novæ-Angliæ, Canadian Musci, No. 440.

Tufts laxly cohering, with few rhizoids, whitish or bright green, not shining. Stem more or less densely pinnate, rigid. Stem-leaves small, patent also in a dry state, loosely and long-decurrent, auricled, papillose at back, distinctly but faintly plicate, concave, broad-ovate, suddenly narrowed to a short, in a dry state, twisted acumen; borders broadly recurved below, sometimes to the middle, denticulate all around from the apex to the auricles; areolation lax, more or less chlorophyllose; alar cells larger, subquadrate, numerous, the other oval-oblong, only the uppermost narrow; costa distinct, reaching above the middle; branch-leaves more loosely disposed, sometimes ovate-oblong and narrow-areolate. Capsule small, suboblong, straight or curved; lid elongate-conic, oblique-apiculate or rostellate; pedicel 1-1.5 cm. long, very rough, purple. Inner perichetial leaves narrower, longer filiform-pointed, nerveless. Monœcious.

This species resembles *Hypnum Novæ-Angliæ* in habit, but differs considerably in the distinctly papillose, looser and patent, wider-areolate leaves and the monœcious inflorescence. In *Hypnum Novæ-Angliæ*, the branches are julaceous and the leaves nearly appressed in a dry state, the branchlets shorter and less evolute. Both have a wide leaf-areolation, resembling the allied *Hypnum filicinum* and *Hypnum commutatum*, also the genus *Amblystegium*.

On rocks, New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On the ground in shade, Canaan Forks, Queen's Co., and Elmwood, King's Co., N.B. (*J. Moser.*)

(862.) **H. Novæ-Angliæ**, Sulliv. & Lesq.; Lesq. & James, Mosses of N. America, 344.

On earth in woods at Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

- (863.) **H. commutatum**, Hedw. ; Lesq. & James, Mosses of N. America, 387 ; Canadian Musci, No. 448.

Rocky Mountains. (*Bourgeau.*) On earth in a swamp, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On wet rocks, North Hastings, Ont. ; on rocks at Hastings, Burrard Inlet, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (864.) **H. falcatum**, Brid. Musc. Recent. III., 63 ; Canadian Musci, No. 340.

H. commutatum var. *falcatum*, C. Muell. ; Lesq. & James, Mosses of N. America, 387,

Come by Chance Cove, Newfoundland ; and Bolster Rocks, Labrador. (*Rev. A. Waghorne.*) Abundant in bogs and on dripping rocks at Hector and Stephen, Rocky Mountains ; on dripping rocks in Eagle Pass, west of Revelstoke, Columbia River, B.C. ; on stones along the springy margin of the west side of Lake Mara, near Sicamous, B.C. (*Macoun.*) On the summit of Mount Queest, Gold Range, B.C. ; alt. 7,000 feet. (*J. M. Macoun.*)

Var. **microphyllum**, Kindb. (n. var.)

Stem leaves very small and entire ; alar cells small ; stem irregularly divided, without paraphyllia, with none, or few rhizoids. Barren.

Bay Bull Arm, and Broad Cove, Placentia Bay, also Blaketown and New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (865.) **H. decipiens**, (De Not.). Kindb.

Thuidium decipiens, De Not. ; Canadian Musci, No. 545.

Allied to *Hypnum falcatum*, *H. commutatum* and *H. filicinum* ; it is distinct principally in the very papillose, not striate leaves and short cells, the alar hyaline.

On calcareous rocks at Hector, Rocky Mountains ; on stones in brooks, Roger's Pass, Selkirk Mountains, B.C. ; on wet rocks, Nanaimo River, below the railway bridge, near Nanaimo, Vancouver Island. (*Macoun.*)

Subgenus IV. RHYTIDIUM, Sulliv.

- (866.) **H. rugosum**, Linn. ; Lesq. & James, Mosses of N. America, 388 ; Canadian Musci, No. 341.

H. rugulosum, Drumm. Musc. Bor.-Am., No. 198.

Rhytidium rugosum Kindb. Laubm. Schw. u. Norveg.

Lake Superior ; in fructification at Beaver Lake ; rare. (*Drummond.*) On dry rocks, Kakabeka Falls, 30 miles west of Fort William,

Lake Superior. (*Mrs. E. G. Britton.*) On dry rocks, near Current River, north of Port Arthur, Lake Superior; also on rocks along Nepigon River, Ont.; on rocks, "Dry Cañon," discharge of Devil's Lake, and on rocks at Morley, foothills of Rocky Mountains; also on the banks of Peace River at the mouth of Smoky River, lat. 56° 30'. (*Macoun.*) Little Bay Islands, Labrador. (*Rev. A. Waghorne.*) Greenland. (*Fl. Gr.*)

Subgenus V. CTENIUM, Sulliv.

(867.) **H. crista-castrensis**, Linn.; Lesq. & James, Mosses of N. America, 389; Canadian Musci, No. 343; Drumm. Musc. Bor-Am., No. 212.

In moist shady woods; abundant. (*Drummond.*) Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) River du Loup (*en bas*), Que. (*St. Cyr.*) Deep-water Creek, Labrador; and Come by Chance and Coachman's Cove, Newfoundland. (*Rev. A. Waghorne.*) On old logs; common, New Brunswick. (*Fowler's Cat.*) On logs, Tobique River, N.B. (*Hay.*) On old logs, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Pine woods, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On logs in swamps at Truro, N.S.; common on logs at Brackley Point, Prince Edward Island; damp woods, Jupiter River, Anticosti; on logs in woods, Gaspé Co., Que.; on old logs in damp woods around Ottawa; abundant in damp woods at Belleville and Lake Nepigon, Ont.; old logs in woods, Manitoba House, Man.; in woods near Lesser Slave Lake, N.W.T.; on old logs, Morley, Rocky Mountains; on logs in Roger's Pass and Albert Cañon, Selkirk Mountains, B.C.; wet woods at Sica-mous, B.C. (*Macoun.*) Saskatchewan. (*Bourgeau.*)

Subgenus VI. CTENIDIUM, Mitt.

(868.) **H. molluscum**, Hedw.; Lesq. & James, Mosses of N. America, 389; Canadian Musci, No. 344.

Pictou Co., N.S. (*McKay.*) On logs, Tobique River, N.B. (*Hay.*) On rotten logs, Hunter's River, Prince Edward Island; on shaded rocks, Ste. Anne des Monts River, Gaspé Co., Que.; on old logs in Dow's swamp, near Ottawa. (*Macoun.*) Bay Bull Arm, Placentia Bay, and Green Harbor, Newfoundland. (*Rev. A. Waghorne.*)

Subgenus VII. DREPANIUM, C. Muell.

- (869.) **H. reptile**, Michx. ; Lesq. & James, Mosses of N. America, 390 ; Canadian Musci, No. 345.

H. cupressiforme foliis angustioribus, Drumm. Musc. Bor.-Am., Nos. 206 and 207.

Rocks and trunks of trees ; not rare (206) ; trunks of trees and rocks ; not uncommon (207). (*Drummond.*) Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Bass River, Fredericton, and Grand Lake, N.B. (*Fowler's Cat.*) On trees near Halifax, N.S. ; on bases of trees, Brackley Point, Prince Edward Island ; trunks of trees, Gaspé Co., Que. ; abundant on trunks of trees at Ottawa ; very common on trunks at Belleville, Ont. ; also at Lake Nipissing and Lake Nepigon, Ont. ; on trees, Dawson Route, west of Lake Superior ; on trees, Athabasca River, near Fort Assiniboine, N.W.T. ; on bases of trees at Manitoba House, Man. (*Macoun.*) On trunks at Punk Island and other points, Lake Winnipeg ; Clear water River, N.W.T., lat. 57°. (*J. M. Macoun.*) Kootanie River, B.C. (*Lyall.*) Vicinity of London, Ont. (*J. Dearness.*)

- (870.) **H. pallescens**, Schimp. Syn. ed. 2.

On limestone rocks on an old stone fence along the Aylmer Road, west of Hull, Que., October 24th, 1891. (*Macoun.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Confounded with *H. reptile*.

- (871.) **H. fertile**, Sendt. ; Lesq. & James, Mosses of N. America, 391 ; Canadian Musci, No. 346, in part.

On old logs, Bass River, N.B. (*Fowler's Cat.*) On logs at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On logs, Tobique River, N.B. (*Hay.*) Baie St. Paul, Charlevoix Co., Que. (*St. Cyr.*) Decayed logs, Belvin's Lake, Que. (*D'Urban.*) On logs, Jupiter River, Anticosti ; on logs, Gaspé Basin, and along the Gaspé coast, Que. ; on old logs in woods at Owen Sound, Ont. (*Macoun.*) Islands in the Gulf of Georgia, B.C. (*Dawson.*) All the above localities doubtful except the last, as the specimens have not been examined by Kindberg.

- (872.) **H. Waghornae**, Kindb. (n. sp.)

Differs from *H. fertile* in the large and hyaline alar leaf-cells, the other basal ones not yellow, capsule tumid at the base, slightly curved, paraphyllia very broad.

New Harbor and Chance Cove, Newfoundland, September 26th, 1890. (*Rev. A. Waghorne.*)

(873.) **H. fastigiatum**, Brid.

On dry rocks at Hector (Kicking Horse Lake) Rocky Mountains, and on large boulders three miles to the west, July, 1885, and August, 1890. (*Macoun.*) Greenland. (*Fl. Gr.*)

(874.) **H. hamulosum**, Bruch & Schimp. ; Lesq. & James, Mosses of N. America, 391 ; Canadian Musci, No. 393.

H. cupressiforme, Drumm. Musc. Bor.-Am., No. 205.

Upon rocks, about Beaver Lake. (*Drummond.*) Along Ste. Mary's River, Anticosti. (*Macoun.*) Greenland. (*Fl. Gr.*) Blaketown and Hopewell Bay, Newfoundland ; Battle Harbor and Deep Water Bay, Labrador. (*Rev. A. Waghorne.*)

(875.) **H. pseudo-fastigiatum**, C. M. & Kindb. (n. sp.)

Allied to *Hypnum reptile*, differing principally in the alar leaf-cells being more numerous, chlorophyllose and dusky, not decolorate, the capsule scarcely contracted below the mouth, the perichetial leaves nerveless.

On the bases of trees in woods in the Columbia River valley, west of Revelstoke, B.C., May 6th, 1890 ; also on rocks at Owen Sound, Ont. (*Macoun.*)

(876.) **H. circinnale**, Hook. ; Lesq. & James, Mosses of N. America, 392 ; Canadian Musci, No. 347, in part.

Vancouver Island. (*Lyall.*) On old logs, in woods at Hastings, Burrard Inlet, B.C. ; also on old logs at Victoria, Vancouver Island. (*Macoun.*) Kotzebue Sound, Nulato and Alaska. (*Roth. Alask.*)

(877.) **H. Sequoieti**, C. Muell. ; Lesq. & James, Mosses of N. America, 392.

H. circinnale, Canadian Musci, No. 347, in part.

Freshwater, Chance Cove, Newfoundland. (*Rev. A. Waghorne.*) On trunks of trees at Revelstoke, Columbia River, B.C. ; on trunks, Mount Benson, near Nanaimo, and at Comox, Vancouver Island. (*Macoun.*) On trunks, Melaspina Inlet, Gulf of Georgia, B.C. (*Dawson.*) Sitka, Alaska ; and at Port Essington, B.C., 1891. (*J. M. Macoun.*)

(878.) **H. callichroum**, Brid. ; Lesq. & James, Mosses of N. America, 392.

Shelburne, Nova Scotia. (*James.*) Greenland. (*Fl. Gr.*)

(879.) **H. Canadense**, Kindb. Bull. Torr. Bot. Club, XVII., 280.

Intermediate between *H. imponens* and *H. subimponens*. Dioecious. Densely caespitose, yellow or pale-green. Stems creeping, densely pinnate-ramulose; branches robust, thick and tumid. Leaves close, falcate, with elongate-ovate or oblong base and short acumen, faintly or not striate, more or less denticulate all around, not reflexed on the borders, larger than in *H. imponens*; cells very narrow, the alar (one or two) large and pellucid, the other basal cells yellow; paraphyllia few, subulate. Perigonial leaves very broad-ovate, abruptly narrowed to a straight subulate point. Capsule obovate, asymmetric or subcylindric and arcuate, thick and not striate; teeth yellow, segments orange, cilia short and not appendiculate; pedicel 4-5 cm. long; upper perichetial leaves erect. This species seems to be confounded with *H. imponens*.

St. John's and Hopewell Bay, Bay Bull Arm and White Bay, Newfoundland. (Rev. A. Waghorne.) On stones, McNab Island, Halifax Harbor, N.S.; on rotten logs at the summit level of the Canadian Pacific Railway, near Hector, Rocky Mountains, alt. 5,300 feet; on old logs at Leamington, Lake Erie, and at Rockcliffe, Ottawa, Ont.; on stones in woods at Hull, Que. (Macoun.) Prince of Wales Island, Alaska, 1891. (J. M. Macoun.)

(880.) **H. imponens**, Hedw.; Lesq. & James, Mosses of N. America, 393; Canadian Musci, No. 348.

Miquelon Island. (Delamare.) Pictou Co., N.S. (McKay.) Old logs, Canaan Forks, N.B. (J. Moser.) Bay Bull Arm, Placentia Bay, and New Harbor, Newfoundland. (Rev. A. Waghorne.) Old logs, Pirate's Cove, Straits of Canso, N.S.; common on rotten logs at Ottawa; abundant in woods at Belleville, Ont.; on old logs at Hastings, B.C.; and on Mount Arrowsmith, Vancouver Island. (Macoun.)

(881.) **H. subimponens**, Lesq.; Lesq. & James, Mosses of N. America, 393; Canadian Musci, No. 349.

Old logs, Canaan Forks, Queen's Co., N.B. (J. Moser.) Green Harbor, Newfoundland. (Rev. A. Waghorne.) Very common on trees and on the ground in British Columbia and on Vancouver Island. (Lyll.) On wet rocks at Revelstoke, Deer Park (Lower Arrow Lake), and at Pass Creek Falls, near Sproat, Columbia River; abundant on rocks at Victoria, Vancouver Island. (Macoun.) On logs at Comox, Vancouver Island. (Dawson.)

Var. **cristula**, Kindb. Bull. Torr. Bot. Club, XVII., 280; Canadian Musci, No. 350.

Leaves green or brownish-green, estriate, filiform-pointed, the point a little shorter than the lanceolate base. Capsule, cylindric, narrow, faintly curved, suberect; teeth at the base pale yellow, hyaline above; perichetial leaves faintly striate.

Quite common on rocks in oak woods, near Victoria, Vancouver Island; fruiting abundantly in April, 1887; on rocks at Moodyville, Burrard Inlet, B.C. (*Macoun.*)

(882.) **H. revolutum**, (Mitt.) Lindb.

H. Heufleri, Jur.; Schimp. Syn. ed. II, 760.

On dry rocks at Morley, foothills of Rocky Mountains; also on dry rocks, three miles below Hector, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

(883.) **H. pilcatile**, (Mitt.) Lesq. & James, Mosses of N. America, 394; Canadian Musci, No. 352.

Davis Strait. (*Taylor.*) Rocky Mountains. (*Bourgeau.*) On stones, Cypress Hills, Alberta; on rocks at the Rocky Mountain Cañon, Peace River, lat. 56°; on rocks near Lesser Slave Lake, N.W.T.; on dry rocks at Lytton, B.C.; very abundant on rocks on the summit of Tunnel Mountain and other mountains at Banff, Rocky Mountain Park. (*Macoun.*) This species is probably not distinct from *H. revolutum*.

(884.) **H. cupressiforme**, Linn.; Lesq. & James, Mosses of N. America, 394; Canadian Musci, No. 351.

Miquelon Island. (*Delàmare.*) Pictou Co., N.S. (*McKay.*) River Montmorency, Beauport, Que. (*St. Cyr.*) New Harbor, St. Johns Green Willow, and Bay Robert, Newfoundland. (*Rev. A. Waghorne.*) On earth at Truro and on logs at Pirate's Cove, Straits of Canso, N.S.; on rocks, South-west Point, Anticosti; on logs, Ste. Anne des Monts River, Gaspé Co., Que.; on earth and rocks, shore of Lake Winnipegosis, Man.; on earth, Cypress Hills, Alberta; base of Saddle Mountain, Devil's Lake, Rocky Mountains; on rocks at Yale, B.C.; on earth, Comox, Vancouver Island. (*Macoun.*)

(885.) **H. complexum**, Lesq. & James, Mosses of N. America, 396.

On rocks, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks between Fort William and Cumberland House. (*Richardson.*)

(886.) **H. arcuatiforme**, Kindb. (n. sp.)

Tufts dense, green, not glossy. Stem creeping, subpinnate. Leaves arcuate, ovate-lanceolate, generally short-acuminate or sub-obtusate, entire, decurrent, not striate; alar cells large, well defined, orange, the other pale and narrow; costa none or short and double. Capsule sub-cylindric, curved, not striate nor furrowed, constricted below the wide mouth; teeth when dry incurved, pale-yellow, hyaline-margined; cilia long, appendiculate; pedicel about 3 cm. long. Probably diœcious. Resembles in habit *Hypnum cupressiforme*. Lid and male flowers not found.

The allied *Hypnum Lindbergii*, Mitt., (*H. arcuatum*, Lindb.) differs at once in the not creeping, irregularly divided stem, the shorter pedicel, the larger capsule, &c.

On earth near the gate of the cemetery at Beechwood, near Ottawa, Ont., September 29th, 1889. (*Macoun.*)

(887.) **H. Lindbergii**, Mitt.

H. arcuatum, Lindb.

On rocks at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Greenland. (*Fl. Gr.*) Miquelon Island. (*Delàmare.*) Topsail Harbor, Newfoundland. (*Rev. A. Waghorne.*)

(888.) **H. Renauldii**, Kindb. (n. sp.)

Agrees with *H. curvifolium* in the stem being more or less pinnate, the inner basal leaf cells finally yellow; with *H. Lindbergii* in the leaves being decurrent, alar cells very much dilated, the capsule not plicate in a dry state; differs from both in the entire leaves. *Hypnum pratense* differs in the leaves not being striate nor decurrent, and alar cells not evolute.

On earth at Sicamous, B.C.; on wet ground and old logs at Revelstoke, B.C.; on rocks, Sydenham River, Owen Sound, Ont.; on earth, near the small lake north of the Aylmer Road, Hull, Que.; on earth at Hunter's River, Prince Edward Island. (*Macoun.*) On earth, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) New Harbor and St. Johns, Newfoundland. (*Rev. A. Waghorne.*)

(889.) **H. curvifolium**, Hedw.; Lesq. & James, Mosses of N. America, 396; Canadian Musci, No. 353; Drumm. Musc. Bor. Am., No. 197.

Miquelon Island. (*Delàmare.*) Topsail Harbor, Newfoundland. (*Rev. A. Waghorne.*) Bass River, N.B. (*Fowler's Cat.*) On logs,

Tobique River, N.B. (*Hay.*) Decayed logs, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On earth at Truro, N.S.; on old logs at Ottawa; abundant on logs by swamps at Belleville, Wooler, Port Dover and Leamington, Ont.; on rocks at Nepigon River, Ont. (*Macoun.*) Prospect Creek, B.C. (*Dawson.*) Vicinity of London, Ont. (*J. Dearness.*) Moist shady places in Upper Canada (Ontario.) (*Drummond.*)

(890.) **H. pratense**, Koch, MS.; Lesq. & James, Mosses of N. America, 397; Canadian Musci, No. 354.

H. amatum, Drumm. Musc. Bor.-Am., No. 196, in part.

Heart's Delight, Newfoundland. (*Rev. A. Waghorne.*) On earth Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Swamps near Carlton House. (*Drummond.*) On earth west of the Fraser River at Quesnel, B.C.; also at Comox, Vancouver Island. (*Macoun.*) Greenland. (*Fl. Gr.*)

(891.) **H. pseudo-pratense**, Kindb. (n. sp.)

Nearly allied to *Hypnum pratense*. Differs in the tufts being more compact, the branches radiculose below, the leaves more crowded, not decurrent, more distinctly denticulate near the apex, and in the monocious inflorescence. Capsules not found.

On old logs in woods at the mouth of Sturgeon Creek, Leamington, Lake Erie, Ont., September 19th, 1890. (*Macoun.*)

(892.) **H. Bambergeri**, Schimp.; Lesq. & James, Mosses of N. America, 397.

Beechy Island and Wellington Channel. (*Lyall fide Mitten.*) Greenland. (*Fl. Gr.*)

Subgenus VIII. HETEROPHYLLUM, C. Mueller.

(893.) **H. Haldanianum**, Grev.; Lesq. & James, Mosses of N. America, 397; Canadian Musci, No. 355.

H. pulchrum, Drumm. Musc. Bor.-Am., No. 180, in part.

Pictou Co., N.S. (*McKay.*) On old logs; common, New Brunswick. (*Fowler's Cat.*) On decaying trunks, at Canaan Forks, N.B. (*J. Moser.*) On logs, Tobique River, N.B. (*Hay.*) On old logs, Truro, N.S.; abundant on rotten logs around Ottawa, Belleville and Wooler, Ont.; on logs at Lake Nipissing, Ont. (*Macoun.*) Common in cedar

swamps near London, Ont. (*J. Dearness*.) Upon trunks of trees in Upper Canada. (*Drummond*.)

(894.) **H. nemorosum**, Koch ; Lesq. & James, Mosses of N. America, 398.

On decayed wood at Canaan Forks, Queen's Co., N.B. (*J. Moser*.)

(895.) **H. flaccum**, C. M. & Kindb. (n. sp.)

Tufts large and loose, brown below, pale-green above. Stems pinnate, sparingly radiculose, red-brown ; branches elongate, attenuate, distant and flaccid ; paraphyllia few, multiform. Leaves oblong-lanceolate, shortly subulate-acuminate, not curved, concave-involute, patent, with excavate dark-orange auricles at the base ; stem-leaves decurrent, slightly recurved at the basal angles ; branch-leaves loose, sub-distichous, not decurrent nor recurved ; cells narrow, long-linear, not chlorophyllose, the alar large, subquadrate, the inner basal narrow, pale-orange ; costa short, double and indistinct or none. Barren.

On old logs (or rocks) Canaan Forks, Queen's Co., N.B. (*J. Moser*.)
On rocks at the foot of Jones Falls, Sydenham River, Owen Sound, Ont. (*Macoun*.)

(896.) **H. subflaccum**, C. M. & Kindb. (n. sp.)

Cylindrothecium Drummondii, Canadian Musci, No. 436.

Tufts loose, glossy green. Stem green, irregularly branching, not radiculose ; branches few and long, flaccid, sub-compressed when dry ; paraphyllia none. Leaves striate, oblong-lanceolate, denticulate above to $\frac{1}{2}$, not curved, loosely appressed or subpatent ; the basal angles hyaline, not excavate ; stem-leaves short-decurrent, acute or short-acuminate ; branch leaves not decurrent, longer acuminate ; cells narrow, long-linear and chlorophyllose, the basal dilated, hyaline and irregular, sub-rectangular, the inner rarely pale-yellowish ; costa none. Dioecious. Female plants not found. Habit of *Hypnum pratense*, but it has entire leaves.

On earth in the "Big Swamp," Murray, Northumberland Co., Ont. October 9th, 1888. (*Macoun*.)

(897.) **H. pseudo-drepanium**, C. M. & Kindb. (n. sp.)

Tufts loose, green, faintly glossy. Secondary stems very long, flaccid, subpinnate, sparingly radiculose, faintly compressed ; paraphyllia none ; branchlets few and very short, curved at the apex. Leaves plicate, entire, from a short broad-ovate base narrowed into a

short incurved, acute acumen, crowded, loosely appressed when dry, not decurrent, not distinctly chlorophyllose; basal cells hyaline, dilated (the inner sometimes yellowish) thick-walled, the alar large sub-rectangular, well-defined, the other longer and narrower; auricles excavate; costa indistinct or short and double. Dioecious. Female plants not found.

On old logs in woods, Dow's swamp, Ottawa, Ont., September 16th, 1889. (*Macoun.*)

Subgenus IX. LIMNOBIUM, Bruch & Schimp.

- (898.) **H. palustre**, Huds.; Lesq. & James, Mosses of N. America, 398; Canadian Musci, No. 356; Drumm. Musc. Bor.-Am., No. 195.

Upon rocks in rivers; common. (*Drummond.*) On rocks in brooks, Never's Rapids, Queen's Co., N.B. (*J. Moser.*) On stones in Jupiter River, Anticosti; on stones in Fox River and in Ste. Anne des Monts River, Gaspé Co., Que.; on rocks below Jones Falls, near Owen Sound, Ont.; on stones Black River, Lake Nepigon; also on rocks in Current River, near Port Arthur, Lake Superior; on stones in Swift Current Creek, Assiniboia; in a ravine on Sulphur Mountain, at Banff, Rocky Mountains; on stones in a brook, Roger's Pass, Selkirk Mountains; in a brook at Deer Park, Columbia River; in a creek at Spence's Bridge, B.C. (*Macoun.*) On wet rocks summit of Mount Queest, Gold Range and up the North Thompson River, B.C. (*J. M. Macoun.*)

- (899.) **H. Columbico-palustre**, C. M. & Kindb. (n. sp.); Canadian Musci, No. 493.

Differs from *Hypnum palustre* in the leaves being longer-apiculate, faintly denticulate, the margins recurved below at one side, the alar cells dilated, well-defined, the costa stout, vanishing above the middle.

On rocks at the mouth of the Illicillewaet Cañon, near Revelstoke, B.C., May 18th, 1890. (*Macoun.*)

- (900.) **H. dilatatum**, Wils.; Canadian Musci, No. 357.

H. (Limnobium) molle, Lesq. & James, Mosses of N. America, 399; Drumm. Musc. Bor.-Am., No. 194.

On stones in Gull River, Victoria Co., Ont.; on stones in brooks along the north shore of Lake Superior; abundant on stones in the Kamanistiquia River, below Kakabeka Falls, west of Lake Superior; on rocks in the stream that discharges the Asulcan Glacier, Selkirk

Mountains, B.C. (*Macoun.*) In rivulets, immediately to the westward of the "Height of Land," Rocky Mountains. (*Drummond.*) Greenland. (*Fl. Gr.*)

- (901.) **H. pseudo-arcticum**, Kindb., Bull. Torr. Bot. Club, XVII, 280.

Differs from *H. arcticum* in the leaves being crenulate at least above the middle; costa short and double, not reaching to the middle; perichetial leaves short-acuminate, serrulate. Peristomial segments rimose in the middle. Stem sparingly radiculose.

On stones in mountain brooks near Sicamous; and in brooks on the Gold Range, north of Griffin Lake, B.C., July 9th, 1889. (*Macoun.*)

- (902.) **H. Norvegicum**, Bruch & Schimp., Bryol. Europ. VI.

Greenland. (*Fl. Gr.*)

- (903.) **H. polare**, Lindb.

Greenland. (*Fl. Gr.*)

- (904.) **H. circulfolium**, C. M. & Kindb. (n. sp.)

Nearly allied to *Hypnum dilatatum*, Wils. (*H. molle*, Lesq. & James). Stem loosely foliate, denudate at the base. Leaves patent, when dry subcircular, faintly crenulate nearly all around, slightly decurrent, at the cordate base distinctly auriculate and in the middle carinate, narrowed above to an indistinct obtuse tip; alar cells large, inflate, sub-oval, the apical also short, the other narrow and flexuous; costa none or indistinct. Barren.

On rocks, Never's Rapids, Queen's Co., N.B., July, 1889. (*J. Moser.*)

- (905.) **H. arcticum**, Sommerf.; Lesq. & James, Mosses of N. America, 400; Canadian Musci, No. 358.

On stones in Fox River and St. Anne des Monts River, Gaspé Co., Que.; on rocks along Lake Nepigon, Ont.; on stones in brooks, Roger's Pass, Selkirk Mountains, B.C.; also along the Quesnel River, Quesnel, B.C. (*Macoun.*) Rocky Mountains. (*Lyall.*) Greenland. (*Fl. Gr.*)

- (906.) **H. Coulardi**, Schimp.

On stones in Ste. Anne des Monts River, Gaspé Co., Que.; and along Gunn River, Anticosti. (*Macoun.*)

- (907.) **H. torrentis**, C. M. & Kindb. (n. sp.)

H. Goulardi, Canadian Musci, No. 503.

Differs from *H. Goulardi* in the stems being filiform, very rigid, the leaves smaller, subcircular, crenulate all around, reflexed at the basal margins, the costa thick and nearly percurrent; it differs also from *Hypnum arcticum* in the loosely disposed, decurrent leaves and their large angular cells.

On sloping limestone rocks in the bed of the torrent a little above the station at Hector, Rocky Mountains, August 12th, 1890. (*Macoun.*)

- (908.) **H. alpestre**, Swartz.; Lesq. & James, Mosses of N. America, 399; Canadian Musci, No. 396.

On rocks in a glacier stream discharging the melted snow on the east side of Castle Mountain, and on Vermillion Mountain at Banff, Rocky Mountains. (*Macoun.*) Greenland. (*Fl. Gr.*)

- (909.) **H. montanum**, Wils. MS.; Lesq. & James, Mosses of N. America, 401.

On damp rocks in the bed of Sydenham River at Owen Sound, Ont. (*Macoun.*) Pickle Harbor, Newfoundland. (*Rev. A. Waghorne.*)

- (910.) **H. pseudo-montanum**, Kindb. (n. sp.); Canadian Musci, No. 539.

Nearly allied to *Hypnum montanum*, differing principally in the stem being longer and more robust, the leaves larger and thinner, more loosely disposed, longer decurrent, not distinctly denticulate, the alar cells large, reaching to the costa, which is simple and prolonged above the middle. Inflorescence monœcious. Capsules not found.

This species and *Hypnum montanum* have a peculiar habit in the leaves being variously curved, either incurved or recurved in the same specimen, and are rather appearing to belong to the section *Campylium*. Their position in the section *Limnobium* is at least doubtful.

On rocks in all the streams around Owen Sound, especially below Jones Falls and the Potawatomie Falls, September 15th, 1890. (*Macoun.*)

- (911.) **H. eugyrium**, Schimp.; Lesq. & James, Mosses of N. America, 401; Canadian Musci, No. 535.

On stones, Bass River, N.B. (*Fowler's Cat.*) On stones in the brook at Pirate's Cove, Straits of Canso, N.S.; on stones in a ravine, Sulphur Mountain, Banff, Rocky Mountains. (*Macoun.*) Pictou Co.,

N.S. (*McKay*.) Miquelon Island. (*Delàmare*.) Chance Cove, Green Island, White Bay and Topsail Harbor, Newfoundland. (*Rev. A. Waghorne*.)

(912.) **H. ochraceum**, Turner, MS. ; Lesq. & James, Mosses of N. America, 401 ; Canadian Musci, No. 360.

Pictou Co., N.S. (*McKay*.) Battle Harbor, Labrador ; and Broad Cove, Newfoundland. (*Rev. A. Waghorne*.) Kent Co., and Fredericton, N.B. (*Fowler's Cat.*) On stones in brooks, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On stones in brooks at Truro, N.S. ; on wet rocks at Mamainse, Michipicotin and Otter Head, Lake Superior ; on rocks in brooks, House Mountain, near Lesser Slave Lake, N.W.T. ; on wet rocks, Peace River, at Hudson Hope, lat. 56° ; on earth and stones, Bear Creek, Roger's Pass, Selkirk Mountains, B.C. ; on stones in streams on the Gold Range, north of Griffin Lake, B.C. ; also on dripping rocks, North Arm, Burrard Inlet, B.C. (*Macoun*.) Cascade Mountains, B.C. (*Lyall*.) Davis Straits. (*Taylor*.) Greenland. (*Fl. Gr.*) Sitka, Alaska, 1891. (*J. M. Macoun*.)

(913.) **H. stramineum**, Dicks.

H. (Calliergon) stramineum, Dicks ; Lesq. & James, Mosses of N. America, 405 ; Canadian Musci, No. 473 ; Drumm. Musc. Bor.-Am., No. 210.

In a marsh at the "Height of Land," Rocky Mountains ; but rare. (*Drummond*.) Miquelon Island. (*Delàmare*.) Hopewell Bay, Newfoundland ; Indian Harbor, and Venison Tickle, Labrador. (*Rev. A. Waghorne*.) Cape Chudleigh, Mansfield Island and Nottingham Island, Hudson Strait. (*R. Bell*.) Bogs and swampy woods, Jupiter River, Anticosti. (*Macoun*.) Among sphagnum, at Bass River, N.B. (*Fowler's Cat.*) Peat bog, Mer Bleue, near Ottawa ; in a small bog two miles west of the C. P. Ry. station, Roger's Pass, Selkirk Mountains ; among grass at the summit of the Gold Range, north of Griffin B.C. (*Macoun*.) Greenland. (*Fl. Gr.*)

(914.) **H. trifarium**, Web. & Mohr.

H. (Calliergon) trifarium, Web. & Mohr ; Lesq. & James, Mosses of N. America, 405 ; Canadian Musci, No. 365.

In stagnant pools, Wellington Beach, Prince Edward Co., Ont. ; boggy shore of Lake Huron at the Fishing Islands, Bruce Co., Ont. ; in a bog at Hector, Rocky Mountains ; in peat bogs near the Nechaco River, Northern British Columbia. (*Macoun*.) Greenland. (*Fl. Gr.*)

(915.) **H. turgescens**, Schimp.

H. (Calliergon) turgescens, Schimp.; Lesq. & James, Mosses of N. America, 406; Canadian Musci, No. 483.

Davis Straits. (*Lyall*.) In boggy places at Hector, and in a glacier stream, on the mountain north of it, alt. 7,500 feet; also on Mount Aylmer, alt. 8,300 feet, Rocky Mountains; in a small brook, Roger's Pass, Selkirk Mountains, B.C. (*Macoun*.) Greenland. (*Fl. Gr.*)

(916.) **H. scorpioides**, Linn.

H. (Scorpidium) scorpioides, Linn.; Lesq. & James, Mosses of N. America, 406; Canadian Musci, No. 366; Drumm. Musc. Bor.-Am., No. 200.

Common in marshes near Carlton House. (*Drummond*.) In very marshy peat bogs, Salt Lake, Anticosti; on the boggy margins of small lakes near Marmora Village, North Hastings, Ont.; in bogs at Castle Mountain and Hector, Rocky Mountains. (*Macoun*.) Greenland. (*Fl. Gr.*) Miquelon Island. (*Delamare*.) Battle Harbor, Labrador; and Western Cove, White Bay, Newfoundland. (*Rev. A. Waghorne*.)

(917.) **H. badium**, Hartm.

H. (Calliergon) badium, Hartm.; Lesq. & James, Mosses of N. America, 406.

On rocks, coast of Labrador. (*J. A. Allen*.) Greenland. (*Fl. Gr.*)

Subgenus X. CALLIERCON, Lesq. & James.(918.) **H. cordifolium**, Hedw.; Lesq. & James, Mosses of N. America, 402; Canadian Musci, No. 361.

Pictou Co., N.S. (*McKay*.) Battle Harbor, Labrador; and New Harbor, Newfoundland. (*Rev. A. Waghorne*.) In wet sandy places, Bass River, N.B. (*Fowler's Cat.*) Swamps, Tobique River, N.B. (*Hay*.) Damp woods, Tignish, Prince Edward Island; in wet woods at Beechwood and Dow's swamp, Ottawa; on the ground in swamps at Belleville and Wooler, Ont.; damp woods, Kakabeka Falls, west of Lake Superior; bogs at Morley, foothills of Rocky Mountains; in springs around Kicking Horse Lake, Rocky Mountains. (*Macoun*.) Greenland. (*Fl. Gr.*) Near London, Ont. (*J. Dearness*.)

- (919.) **H. giganteum**, Schimp.; Lesq. & James, Mosses of N. America, 403; Canadian Musci, No. 362.

H. cordifolium, Drumm. Musc. Bor.-Am., No. 209.

Common in swamps and marshy places. (*Drummond.*) In springs at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) In swamps at Becscie River, Anticosti; peat bogs at Tignish, Prince Edward Island; in swamps at Ottawa; peat bogs, Oak Hills, Hastings Co., Ont.; peat bogs Porcupine Mountains, Man.; in bogs on the slopes of House Mountain, near Lesser Slave Lake, N.W.T.; in springs at Morley and Banff, Rocky Mountains; in swamps at Craigellachie, Eagle River, B.C.; also in springs at Revelstoke, B.C. (*Macoun.*) Greenland. (*Fl. Gr.*) Near London, Ont. (*J. Dearness.*)

- (920.) **H. Richardsoni**, (Mitt.); Lesq. & James, Mosses of N. America, 404; Canadian Musci, No. 378.

H. trifarium, Drumm. Musc. Bor.-Am., No. 211.

Baffin's Bay, coast of Greenland. (*Inglfield.*) Swamps about the Great Bear Lake. (*Richardson.*) In a marshy bog at Tignish, Prince Edward Island; in water along the south end of McKay's Lake at Ottawa, Ont. (*Macoun.*)

- (921.) **H. sarmentosum**, Wahl.; Lesq. & James, Mosses of N. America, 403; Canadian Musci, No. 363, in part.

In bogs at Bonne Esperance, Labrador. (*J. A. Allen.*) In bogs at Salt Lake, Anticosti. (*Macoun.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Battle Harbor and Seal Islands, Labrador; White Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (922.) **H. cuspidatum**, Linn.; Lesq. & James, Mosses of N. America, 403; Canadian Musci, No. 385.

Miquelon Island. (*Delàmare.*) Peaty meadow at Tignish, Prince Edward Island; in swamps at Craigellachie, Eagle Pass, B.C.; also in swampy woods near Comox, Vancouver Island. (*Macoun.*) Pack River, B.C. (*Lyall.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) White Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (923.) **H. purum**, Linn.

Miquelon Island. (*Delàmare.*)

- (924.) **H. Schreberi**, Willd.; Lesq. & James, Mosses of N. America, 404; Canadian Musci, No. 364; Drumm. Musc. Bor.-Am., No. 208.

Shady woods; abundant. (*Drummond.*) In shady woods, Bass River, and Little Branch, Miramichi River, N.B. (*Fowler's Cat.*) Shaded ground, Queen's Co., N.B. (*J. Moser.*) On logs in woods, Tobique River, N.B. (*Hay.*) Pictou Co., N.S. (*McKay.*) Baie St. Paul, Charlevoix Co., Que. (*St. Cyr.*) Miquelon Island. (*Delàmare.*) Deep Water Creek and Battle Harbor, Labrador; Placentia Bay and Bay Robert, Conception Bay, Newfoundland. (*Rev. A. Waghorne.*) Quite common on logs and earth in shaded woods across the continent. Truro, N.S.; Brackley Point and Rustico Bay, Prince Edward Island; Gaspé Co., Que.; Ottawa, Belleville, Wooler and Owen Sound, Ont.; in woods, Lake Manitoba, Man.; on logs at Revelstoke, Columbia River, B.C.; also at Moodyville, Burrard Inlet, B.C.; common in woods at Quesnel, B.C. (*Macoun.*) Saskatchewan. (*Bourgeau.*) Greenland. (*Fl. Gr.*) Sitka. (*Roth. Alask.*) Kadiak Island, Alaska. (*J. M. Macoun.*)

129. HYLOCOMIUM, Schimp.

- (925.) **H. splendens**, (Hedw.) Schimp.

Hypnum (Pleurozium) splendens, Hedw.; Lesq. & James, Mosses of N. America, 407; Canadian Musci, No. 367; Drumm. Musc. Bor.-Am. No. 218.

Shady woods. (*Drummond.*) Pictou Co., N.S. (*McKay.*) Miquelon Island. (*Delàmare.*) Battle Harbor, Labrador; and New Harbor, Newfoundland. (*Rev. A. Waghorne.*) On old logs; common, N.B. (*Fowler's Cat.*) On earth in woods, Never's Rapids, Queen's Co., N.B. (*J. Moser.*) On earth at Tobique River and Lac Bean, N.B. (*Hay.*) Fallen trees, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Very common near London, Ont. (*J. Dearness.*) Quite common on logs and earth in cool shady woods across the continent. Common at Brackley Point, Prince Edward Island; South-west Point, Anticosti; Pirate's Cove, Straits of Canso, N.S.; Gaspé Co., Que.; at Ottawa, Carleton Place, Belleville, and Owen Sound, Ont.; common in the Rocky Mountains at Hector, Lake Louise and Banff; in woods along the Columbia River at Revelstoke, B.C.; at Quesnel on the Fraser River, and Hastings Burrard Inlet, B.C.; common in woods, Vancouver Island. (*Macoun.*) Alert Bay, Vancouver Island, and Queen Charlotte Islands. (*Dawson.*) In woods along the Athabasca River, N.W.T., and Sitka, Alaska. (*J. M. Macoun.*) Nulato and Alaska. (*Roth.*)

Alask.) St. Paul Island, Behring Sea. (*Palmer.*) Greenland. (*Fl. Gr.*)

Var. **compactum**, Lesq. & James.

Near Forteau, Labrador. (*J. A. Allen.*)

(926.) **H. Alaskanum**, (Lesq. & James). Lindb.

Hypnum (Calliergon) Alaskanum, Lesq. & James, Mosses of N. America, 405.
H. umbratum, Canadian Musci, No. 368, in part.

On earth in woods at Morley, Rocky Mountains; also on earth in mountain woods at Spence's Bridge, B.C., alt. 3,500 feet; in woods at House Mountain, near Lesser Slave Lake, N.W.T. (*Macoun.*) On the ground in Alaska. (*Lesq. & James.*) St. Paul Island and Ounalaska, Behring Sea, 1891. (*J. M. Macoun.*)

(927.) **H. umbratum**, (Ehrh.) Schimp.

Hypnum (Pleurozium) umbratum, Ehrh.; Lesq. & James, Mosses of N. America, 407; Canadian Musci, No. 368, in part.

Large patches in shady woods, Bass River, N.B. (*Fowler's Cat.*) In woods at Chipman, Queen's Co., N.B. (*J. Moser.*) On rocks at Pirate's Cove, Straits of Canso, and at Truro, N.S.; on earth in woods, Hunter's River, Prince Edward Island; on rocks, Mount Albert, Gaspé Co., Que. (*Macoun.*) Pictou Co., N.S. (*McFay.*) Miquelon Island. (*Delàmare.*) Bay Bull Arm, Placentia Bay, and Western Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(928.) **H. pyrenaicum** (Spruce.) Lindb.

Hypnum (Pleurozium) Oakesii, Sulliv.; Lesq. & James, Mosses of N. America, 408; Canadian Musci, No. 369.

On stones at Canaan Forks, Queen's Co., and Tay, York Co., N.B. (*J. Moser.*) On old logs at Owen Sound, Ont.; on logs at Revelstoke, Columbia River, B.C. (*Macoun.*)

(929.) **H. brevirostre**, (Ehrh.) Schimp.

Hypnum (Pleurozium) brevirostre, Ehrh.; Lesq. & James, Mosses of N. America, 408; Canadian Musci, No. 373.

On rocks, Pirate's Cove, Straits of Canso, N.S.; on rocks near the "High Falls," Lievre River, Que.; deep shaded ravines at Owen Sound, Ont. (*Macoun.*) On rocks, Halifax Co., N.S. (*J. Moser.*) Pictou Co., N.S. (*McKay.*) Miquelon Island. (*Delàmare.*)

(930.) **H. squarrosus**, (Linn.) Schimp.

Hypnum (Hylacomium) squarrosus, Linn.; Lesq. & James, Mosses of N. America, 409; Canadian Musci, No. 370.

Pictou Co., N.S. (*McKay*.) Placentia Bay, Newfoundland. (*Rev. A. Waghorne*.) In woods along Jupiter River and Gunn River, Anticosti; on earth along Bear Creek, and Glacier Creek, Roger's Pass, also at Albert Cañon, Selkirk Mountains, B.C.; wet places along Lake Mara, Sicamous, and on the mountains north of Griffin Lake, B.C.; in a small creek, New Westminster Junction and along Burrard Inlet at Moodyville, B.C. (*Macoun*.) Sitka. (*Roth. Alaska*.) St. Paul Island and Attu Island, Behring Sea, 1891. (*J. M. Macoun*.) St. Paul Island, Behring Sea. (*Palmer*.) Greenland. (*Fl. Gr.*)

* **H. clavescens**, (Wils.) Lindb.; Canadian Musci, No. 450.

On rocks (fruiting) at Truro, N.S.; on rocks, North Arm, Burrard Inlet, B.C. (*Macoun*.)

(931.) **H. triquetrum**, (Linn.) Schimp.

Hypnum (Hylacomium) triquetrum, Linn.; Lesq. & James, Mosses of N. America, 409; Canadian Musci, No. 371; Drumm. Musc. Bor.-Am., No. 192.

Shady woods; not uncommon. (*Drummond*.) On the ground in woods, Bass River, N.B. (*Fowler's Cat.*) On the ground in woods, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On logs, Tobique River, N.B. (*Hay*.) Pictou Co., N.S. (*McKay*.) Miquelon Island. (*Delàmare*.) On old logs in woods, River Rouge, Argenteuil Co., Que. (*D'Urban*.) On earth in woods, Brackley Point, Prince Edward Island; on earth in woods, Pirate's Cove, Straits of Canso, N.S.; in woods, Salt Lake, Anticosti; common in woods, Gaspé Co., Que.; common in woods at Ottawa, Belleville and Owen Sound, Ont.; in woods, Red Rock, Lake Superior; in woods at Banff, Rocky Mountains; on earth in woods at Revelstoke, B.C.; on earth at Hastings, Burrard Inlet, B.C.; abundant in woods at Victoria and Cedar Hill, Vancouver Island. (*Macoun*.) Very common at London, Ont. (*J. Dearness*.) Nulato and Alaska. (*Roth. Alaska*.) Sumas Prairie, lat. 49, B.C. (*Lyll*.) Cape Vancouver, Alaska, 1891. (*J. M. Macoun*.) St. Paul Island, Behring Sea. (*Palmer*.)

(932.) **H. robustum**, (Hook.) Kindb. enumer. bryin, exotic.

Hypnum (*Rhytidium*) *robustum*, Hook.; Lesq. & James, Mosses of N. America, 388; Canadian Musci, No. 342; Drum. Musc. Bor.-Am., No. 199.

H. (*Hylocomium*) *Flemmingii*, Lesq. & James, Mosses of N. America. 410.

Upon the ground, on the large hill to the westward of the "Height of Land," Rocky Mountains. (*Drummond.*) On earth in woods along the Columbia River at Revelstoke, also in woods at the Hot Springs, Kootanie Lake, B.C.; in woods at Roger's Pass, Selkirk Mountains, B.C.; very abundant on the slopes of Mount Benson, Nanaimo and at Victoria, Vancouver Island. (*Macoun.*) North-west coast. (*Menzies.*)

(933.) **H. loreum**, (Linn.) Schimp.

Hypnum (*Hylocomium*) *loreum*, Linn.; Lesq. & James, Mosses of N. America, 410; Canadian Musci, No. 372.

Aspey Bay, Cape Breton. (*McKay.*) Miquelon Island. (*Delàmare.*) Grand Vâche, Newfoundland. (*Rev. A. Waghorne.*) On logs, Pirate's Cove, Straits of Canso, N.S.; on old logs at Revelstoke, and on earth at Hastings, B.C.; on logs at Victoria, and Comox, Vancouver Island. (*Macoun.*) On logs, Queen Charlotte Islands, and in Johnston Straits, Gulf of Georgia, B.C. (*Dawson.*) Sitka and Alaska. (*Roth. Alask.*) Kadiak Island and Sitka, Alaska, 1891. (*J. M. Macoun.*) Woods, Sumas, lat. 49°, B.C. (*Lyall.*)

Additions and Corrections.

SPHAGNUM, DIII.

(1.) **S. fimbriatum**, Wils.

Little Bay Islands, Labrador. (*Rev. A. Waghorne.*) Bogs, Ounaslaska Island, Behring Sea, 1891. (*J. M. Macoun.*)

Var. **arcticum**, C. Jensen.

Hopewell Bay and Grand Vache, Newfoundland; Trap Cove, Labrador. (*Rev. A. Waghorne.*) St. Matthew Island, Behring Sea, and Cape Vancouver, Alaska, 1891. (*J. M. Macoun.*)

Var. **robustum**, Warnst.

In a swamp at Burnaby Lake, near Hastings, B.C., 1891. (*Law.*)

(2.) **S. Girgenshonii**, Russ.

Black River, Placentia Bay, New Harbor, Green Harbor, and White Bay, Newfoundland. (*Rev. A. Waghorne.*) St. George Island, Behring Sea; Kadiak Island, Alaska, 1891. (*J. M. Macoun.*)

(3.) **S. Russowii**, Warnst.

Spreadeagle, Norman's Cove, Western Cove, Harbor Deep, Lonely Island, North-West River and East Harbor, Newfoundland; Squaw Island, Labrador. (*Rev. A. Waghorne.*)

Var. **Girgensohnioides**, Russ.

Green Harbor, Newfoundland. (*Rev. A. Waghorne.*) In a swamp at Hot Springs, Kootanie Lake, B.C. (*Macoun.*)

(4.) **S. fuscum**, Von Klinggraeff.

Western Cove, Harbor Deep, and New Harbor, Newfoundland; Mount Vesuvius, Labrador. (*Rev. A. Waghorne.*) Sundance Creek, Banff, Rocky Mountains. (*Macoun.*)

Var. **pallescens**, Warnst.

Western Cove, and White Bay, Newfoundland. (*Rev. A. Waghorne.*) Kadiak Island, Alaska, 1891. (*J. M. Macoun.*)

(5.) **S. tenellum** var. **rubellum**, Warnst.

Black River, Placentia Bay ; Western Cove and Seal Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(6.) **S. Warnstorffii**, Russ.

Near Seal Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

Var. **viride**, Warnst.

Bogs, Sundance Creek and near the Railway Station at Banff, Rocky Mountains, July 25th, 1891. (*Macoun.*)

Var. **purpurascens**, Russ.

In a bog at Sundance Creek, Rocky Mountains, July 25th, 1891. (*Macoun.*)

(7.) **S. quinquefarium**, (Braithw.) Warnst.

New Harbor, Newfoundland. (*Rev. A. Waghorne.*) In a peat bog along the railway below Casselman, Russell Co., Ont. (*Macoun.*)

(8.) **S. acutifolium**, Russ. & Warnst.

Norman Cove, Green Harbor, Spreadeagle, Hopewell Bay and White Bay, Newfoundland ; Cartridge Bight, Seal Islands and Spence's Cove, Labrador. (*Rev. A. Waghorne.*)

Var. **versicolor**, Warnst.

Peat bog, Sundance Creek, Banff, Rocky Mountains. (*Macoun.*) Fort Simpson, B.C., 1891. (*J. M. Macoun.*)

Var. **pallescens**, Warnst.

New Harbor, Newfoundland ; Swan River, Labrador. (*Rev. A. Waghorne.*)

Var. **rubrum**, Warnst.

Placentia Bay, West Bay River, Spreadeagle, Harbor Deep, Green Harbor, and near Seal Cove, White Bay, Newfoundland ; Trap Cove, Caribou Island and Indian Harbor, Labrador. (*Rev. A. Waghorne.*)

Attu Island, Behring Sea ; Kadiak Island, Alaska, and Fort Simpson, B.C., 1891. (*J. M. Macoun.*)

(934.) **S. Labradorensis**, Warnstorf. (n. sp.)

This species belongs to the *Acutifoliae* group, and is characterized by yellow woody corpuscles of the stem, by stem-leaves tongue or spatula-shaped, without fibres, narrowly edged, their hyaline cells generally 1—4 parted and showing on their inward surface great gaps in the membrane. The leaves of the branches are eggshaped, toothed at their broadly truncated apex, almost or not at all edged, and finely denticulated on their upper edge. Pores are found on the inward side in small numbers ; these are small toward the apex and are situated in the corners of the cells ; there are besides a few large holes toward the middle near the lateral edges. On the outside the pores are very numerous, narrowly elliptic, and are near the commissures ; downward and toward the lateral edges they become broader and larger. The chlorophyll cells appear in transverse section equilaterally triangular and have a thin wall around ; on the exterior they are well enclosed by the hyaline cells which are much arched forward. Plants above dark dirty purple.

Black River, Placentia Bay, Newfoundland, May 7th, 1891. (*Rev. A. Waghorne.*)

(9.) **S. subnitens**, Russ. & Warnst.

Eagle Harbor and Green Harbor, Newfoundland, April 12th, 1891. (*Rev. A. Waghorne.*)

Var. **flavicomans**, Card.

New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

(10.) **S. Lindbergii**, Schpr.

Near Seal Cove White Bay, Newfoundland ; Mount Vesuvius, Fox Harbor, and Indian Harbor, Labrador. (*Rev. A. Waghorne.*)

(11.) **S. riparium**, Aongstr.

St. George Island, Behring Sea, 1891. (*J. M. Macoun.*)

(12.) **S. recurvum**, Russ. & Warnst.

Broad Cove, New Harbor and Hopewell Bay, Newfoundland ; Indian Harbor, Labrador. (*Rev. A. Waghorne.*) Kadiak Island, Alaska, 1891. (*J. M. Macoun.*)

Var. **pulchrum**, Lindb.

Placentia Bay, Newfoundland ; Trap Cove, Caribou Island and St. Michael's, Labrador. (*Rev. A. Waghorne.*)

Var. **mucronatum**, Russ.

Placentia Bay, near Seal Cove, Green Harbor and White Bay, Newfoundland ; Indian Harbor, Labrador. (*Rev. A. Waghorne.*)

Var. **parvifolium**, Warnst.

Placentia Bay and Hopewell Bay, Newfoundland. (*Rev. A. Waghorne.*)

(13.) **S. cuspidatum**, Russ. & Warnst. var. **Torreyanum**, Sulliv.

Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*)

Var. **plumosum**, Bryol. Germ.

Race Course, Ottawa. (*Fletcher.*)

(15.) **S. squarrosus**, Pers.

Bay Bull Arm, White Bay, Broad Cove and New Harbor, Newfoundland ; Indian Harbor, Labrador. (*Rev. A. Waghorne.*) Petropaulowski (Asia), 1891. (*J. M. Macoun.*) Damp woods near Ottawa. (*Macoun.*)

Var. **semisquarrosus**, Russ.

Cape Vancouver, Alaska, 1891. (*J. M. Macoun.*)

Var. **imbricatum**, Schp.

Atkah Island and St. George Island, Behring Sea ; Cape Vancouver, Alaska, 1891. (*J. M. Macoun.*)

(16.) **S. teres**, Aongstr.

Harbor Deep, Newfoundland ; Battle Harbor and St. Michael's Bay, Labrador. (*Rev. A. Waghorne.*) Attu Island, Behring Sea, 1891. (*J. M. Macoun.*)

(18.) **S. compactum**, DC.

Broad Cove, Newfoundland. (*Rev. A. Waghorne.*)

Var. **squarrosus**, Russ.

Damp ground, Canaan Forks, Queen's Co., N.B. (*J. Moser.*)

Var. **imbricatum**, Warnst.

Cartridge Bight and Indian Harbor, Labrador. (*Rev. A. Waghorne.*)
Attu Island, Behring Sea, 1891. (*J. M. Macoun.*)

(19.) **S. Carberi**, Lesq. & James.

Between Black River and North Harbor, Placentia Bay, Newfoundland. (*Rev. A. Waghorne.*)

(20.) **S. Pylalei**, Brid. var. **ramosus**, Warnst.

Near Black River, Placentia Bay, Newfoundland; Venison Tickle, Seal Islands and Cartridge Bight, Labrador. (*Rev. A. Waghorne.*)

(21.) **S. subsecundum**, Nees.

Witless Bay Road, New Harbor, Newfoundland. (*Rev. A. Waghorne.*)
Hunter's Home, Queen's Co., N.B. (*J. Moser.*)

(22.) **S. rufescens**, Bryol. Germ.

Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*)

(23.) **S. imbricatum**, Russ. var. **cristatum**, Warnst.

Placentia Bay and Green Island, Newfoundland. (*Rev. A. Waghorne.*)
Attu Island, Behring Sea, 1891. (*J. M. Macoun.*)

(24.) **S. cymbifolium**, Ehrh.

Norman's Cove, Arnold's Cove, Harbor Deep and White Bay, Newfoundland; St. Michael's Bay, Labrador. (*Rev. A. Waghorne.*) Ounaslaska Island, Behring Sea, 1891. (*J. M. Macoun.*)

(25.) **S. papillosum**, Lindb.

Black River, Placentia Bay and Green Harbor, Newfoundland; Battle Harbor and Indian Harbor, Labrador. (*Rev. A. Waghorne.*)

Var. **intermedium**, (Russ.) Warnst.

In damp woods at Casselman, near Ottawa, May 16th, 1891. (*Macoun.*)

(26.) **S. medium**, Limpr.

Topsail, Green Harbor, New Harbor, Harbor Deep, and White Bay, Newfoundland; Indian Harbor, Labrador. (*Rev. A. Waghorne.*) Fort Simpson, B.C., 1891. (*J. M. Macoun.*)

(27.) **S. molluscum**, Bruch.

Bay Bull Arm and Topsail, Newfoundland; Seal Islands, Labrador. (*Rev. A. Waghorne.*)

2. ANDREÆA. Ehrh.(28.) **A. petrophila**. Ehrh.

Harbor Deep, Grand Vâche and White Bay, Newfoundland; Deep-water Creek, Venison Tickle, Battle Harbor and Bolster Rocks, Labrador. (*Rev. A. Waghorne.*)

8. CYMNOSTOMUM, Hedw.(44.) **C. rupestre**, Schwaegr.

Battle Harbor, coast of Labrador; White Bay, Newfoundland. (*Rev. A. Waghorne.*) On limestone rocks, Owen Sound, Ont. (*Macoun.*)

(45.) **C. curvirostrum**, Hedw.

On wet rocks at the base of Saddle Mountain, Devil's Lake, Rocky Mountains. (*Macoun.*)

9. EUCLADIUM, Bryol. Europ.(48.) **E. verticillatum**, Bryol. Europ.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

12. DICRANOWEISIA, Lindb.(52.) **D. crispula**, Lindb.

On rocks, Venison Tickle and Indian Harbor. (*Rev. A. Waghorne.*) St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*) On rocks, Sulphur Mountain, Banff, Rocky Mountains. (*Macoun.*)

(935.) **D. obliqua**, Kindb. (?)

On rocks, St. Lawrence Island, Behring Sea, 1891. (*J. M. Macoun.*)

15. CYNODONTIUM, Schimp.

(57.) *C. Schistli*, Schimp.

Near New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

(61.) *C. subalpestre*, Kindb.

Dicranum polycarpum, Drumm. Musc. Bor.-Am., No. 103, in part.

Tufts green, about 1 cm. high or lower. Leaves crisped, from the narrowly ovate-oblong base attenuate-subulate, acute, nearly smooth also on the costa, entire or indistinctly denticulate above; borders recurved to the middle at one side; cells pellucid, mostly quadrate, the alar very much wider, rectangular, hyaline. Perichetial leaves with a broader base, the inner ones very much shorter. Capsule small, subcylindric-clavate, wide-mouthed, faintly striate when dry; teeth pale, bifid, not papillose; annulus wanting; lid conic, short-rostrate; pedicel yellow, finally bright-red.

On rocks below Norway House; abundant. (*Drummond.*)

(62.) *C. polycarpum*, Schimp.

The references belonging to *J. A. Allen's* specimens and those from Lake Nepigon belong here. White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(64.) *C. virens*, Schimp.

Grand Vache and White Bay, Newfoundland; Battle Harbor, Indian Harbor, Seal Islands and Venison Tickle, Labrador. (*Rev. A. Waghorne.*) On earth near Fort Assiniboine, Athabasca River. (*Macoun.*)

Var. *serratum*, Bruch & Schimp.

On wet banks of a brook, flowing from Mount Macdonald, Roger's Pass, Selkirk Mountains. (*Macoun.*)

(65.) *C. Wahlenbergii*, (Brid.)

Battle Harbor, coast of Labrador. (*Rev. A. Waghorne.*) Cape Vancouver, Alaska, 1891. (*J. M. Macoun.*) St. Paul Island, Behring Sea. (*Palmer.*) "Dry Cañon," discharge of Devil's Lake, Rocky Mountain Park. (*Macoun.*)

Var. *compactum*, (Schimp.)

Indian Harbor, coast of Labrador. (*Rev. A. Waghorne.*)

16. DICHODONTIUM, Schimp.**(66.) D. pellucidum, Schimp.**

Atkah Island and Ounalaska, Behring Sea, 1891. (*J. M. Macoun.*)
White Bay, Newfoundland. (*Rev. A. Waghorne.*)

Var. fagi-montanum, Braithw.

Dicranum pellucidum, Drumm. Musc. Bor.-Am., No. 108.

Rocks of Portage River near the Columbia, Rocky Mountains.
(*Drummond.*)

17. TREMATODON, Michx.**(68.) T. ambiguum, Hornsch.**

Western Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

19. DICRANELLA, Schimp.**(72.) D. Grevilleana, Schimp.**

On earth along the Columbia River at Revelstoke, B.C. (*Macoun.*)

(76.) D. varia, Schimp.

Quite common, Cave Avenue, Banff, Rocky Mountains. (*Macoun.*)

(78.) D. rufescens, Schimp.

On earth along the discharge of Leamy's Lake, near Ottawa.
(*Macoun.*) Kadiak Island, Alaska; and Fort Simpson, B.C., 1891.
(*J. M. Macoun.*)

(79.) D. subulata, Schimp.

St. Lawrence Island and St. Paul Island, Behring Sea; and Fort Simpson, B.C., 1891. (*J. M. Macoun.*)

(80.) D. heteromalla, Schimp.

Prince of Wales Island, Alaska; Skeena River, B.C., 1891. (*J. M. Macoun, Palmer.*) Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*)

20. DICRANUM, Hedw.**(83.) D. molle, Wils.**

St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*)

(84.) **D. Starkii**, Web. & Mohr.

Chance Cove, Newfoundland; Bolster Rocks, Labrador. (Rev. A. Waghorne.) Mountains east of Adam's Lake, B.C., alt. 5,600 feet. (Dawson.)

(86.) **D. strictum**, Schleich.

Athabasca River at its junction with the Clearwater River; Ounalaska and St. Paul islands, Behring Sea, 1891. (J. M. Macoun.)

(87.) **D. montanum**. Hedw.

Harbor Deep, Newfoundland. (Rev. A. Waghorne.) On the bases of trees at Hector, Rocky Mountains. (Macoun.)

(94.) **D. angustifolium**, Kindb.

D. angustifolium has a purplish-red beak on the capsule.

On earth in woods at Agassiz, B.C.; on Cedar Hill, Vancouver Island. (Macoun.) On earth, Alert Bay, Vancouver Island. (Dawson.) Ounalaska Island, Behring Sea, 1891. (J. M. Macoun.)

(95.) **D. sulcatum**, Kindb.

Leaves often falcate, about 5-8 mm. long; capsule sometimes distinctly strumose.

(99.) **D. scoparium**, Hedw.

Western Cove, White Bay, Newfoundland. (Rev. A. Waghorne.) In woods along the Columbia River at Revelstoke, B.C. (Macoun.) Sitka and Kadiak islands, Alaska, 1891. (J. M. Macoun.)

Var. **scopariiformis**, Kindb.

On earth near Victoria, Vancouver Island, December 24th, 1872. (Macoun.) Seal Cove, White Bay, Newfoundland. (Rev. A. Waghorne.)

(101.) **D. congestum**, Brid.

Harbor Deep and Bay Bull Arm, Placentia Bay, Newfoundland. (Rev. A. Waghorne.) Skeena River, B.C., 1891. (J. M. Macoun.)

(102.) **D. fuscescens**, Turn.; Drumm. Musc. Bor.-Am., No. 82.

Upon roots of trees in Upper Canada (Ontario.) (Drummond.) Coachman's Cove, Newfoundland. (Rev. A. Waghorne.)

(103.) **D. Muehlenbeckii**, Bruch & Schimp.

On rocks, Battle Harbor, Labrador. (*Rev. A. Waghorne.*) On the bases of stumps, Fox River, Gaspé Co., Que.; on roots of trees, North Bay, Lake Nipissing, Ont. (*Macoun.*)

(104.) **D. brevifolium**, Lindb.; Canadian Musci, No. 588.

On rocks at the head of Lake Louise, Rocky Mountains; also along the Blackwater River, B.C. (*Macoun.*)

(936.) **D. spadiceum**, Zett. Musc. Pryn., 1864, p. 70; Canadian Musci, No. 537.

D. neglectum, (Limpr.) Juv. & Milde.

On rocks, summit of Mount Niblock, Lake Agnes, alt. 8,000 feet; on rocks, Mount Aylmer near Devil's Lake, alt. 8,300 feet; and on rocks 3 miles below Hector, Rocky Mountains. (*Macoun.*)

(106.) **D. leucobasis**, C. M. & Kindb.

On earth in woods, Campbell Hill, Cache Creek, B.C., May 24th, 1875. (*Macoun.*)

(937.) **D. Sauteri**, Schimp. var. **pachytrichum**, Kindb. (n. var.)

Stem very tomentose in its whole length; pedicel short, about 1 cm. long. This species differs from *D. longifolium* in the very much narrower costa of the nearly entire leaves.

On sticks in a small brook coming in from the south in Roger's Pass, west of the C. P. Railway Station, Selkirk Mountains, July 29th, 1890. (*Macoun.*)

(107.) **D. elongatum**, Schwaegr.; Canadian Musci, No. 592.

Battle Harbor and Indian Harbor, Labrador. (*Rev. A. Waghorne.*) On earth in damp woods, east of Devil's Lake, Rocky Mountains. (*Macoun.*)

(109.) **D. fragillifolium**, Lindb.

D. elongatum var. *minor* Drum. Musc. Bor.-Am., No. 92.

On decayed wood; rare. (*Drummond.*) On rocks, Lake Superior, above Michipicoten. (*Macoun.*)

- (111.) **D. albicans**, Bruch & Schimp. var. **denticulatum**, Kindb.
(n. var.) ; Canadian Musci, No. 589.

Costa minutely denticulate above.

On rocks, 3 miles below Hector, Rocky Mountains ; also on rocks
in Roger's Pass, Selkirk Mountains, August 7th, 1890. (*Macoun.*)

- (114.) **D. subpalustre**, C. M. & Kindb.

Along the Clearwater River, N.W.T. (*J. M. Macoun.*)

- (115.) **D. Bergeri**, Bland.

Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*) In a swamp,
15 miles west of Port Arthur, Lake Superior. (*Macoun.*)

- (116.) **D. Drummondii**, C. Muell.

In woods, at Kicking Horse Lake, Rocky Mountains. (*Macoun.*)

Var. **trachyneuron**, Kindb.

In a swamp, 15 miles west of Port Arthur, Lake Superior. (*Macoun.*)

24. FISSIDENS, Hedw.

- (131.) **F. osmundoides**, Hedw.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (132.) **F. adiantoides**, Hedw.

Battle Harbor, Newfoundland. (*Rev. A. Waghorne.*)

27. CERATODON, Brid.

- (138.) **C. purpureus**, Brid

Squaw Head and Venison Tickle, Labrador. (*Rev. A. Waghorne.*)
St. Paul and Ounalaska islands, Behring Sea ; Sitka Island, Alaska ;
and Skeena River, B.C., 1891. (*J. M. Macoun.*)

- (938.) **C. heterophylla**, Kindb. Ott. Nat. Vol. V. 179.

Agrees with *Ceratodon purpureus* in the shape of the capsule, the
stem-leaves and the not excurrent costa and the revoluble annulus, but
the capsule is often more curved and distinctly strumose ; agrees with
Ceratodon conicus (Hampe) in the peristomial teeth, having few articula-

tions ; differs from both in the blunt perichetial leaves, is also very peculiar in the short, concave suboval leaves of the long shoots.

On earth, St. Paul Island, Behring Sea, August 8th, 1891. (*J. M. Macoun.*)

29. DISTICHUM, Bruch & Schimp.

(142.) **D. capillaceum**, Bruch & Schimp.

Lance la Loup, Little Bay islands and Battle Harbor, Labrador ; not uncommon. Western Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(143.) **D. inclinatum**, Bruch & Schimp.

Battle Harbor and Little Bay islands, Labrador ; also White Bay, Newfoundland. (*Rev. A. Waghorne.*)

34. POTTIA, Ehrh.

(157. **P. Heimli**, Fuern.

St. Matthew Island and Behring Island, Behring Sea, 1891. (*J. M. Macoun.*)

35. DIDYMODON, Hedw.

(160.) **D. rubellus**, Bruch & Schimp.

Rocky Mountain Cañon, Peace River, lat. 56°. (*Macoun.*) Clear-water River, near its confluence with the Athabasca, N.W.T. (*J. M. Macoun.*) White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(939.) **D. Baden-Powellii**, Kindb. Ott. Nat. Vol. V. 179.

Differs from *Didymodon rubellus* in the dioecious inflorescence, the blunt, conic, very short lid, scarcely 1-5 of the capsule, and the distinctly dentate leaves (as in *Didymodon alpigenus*, Vent). The tufts are compact, about 2 cm. high, the leaves revolute nearly all around, short-acuminate the lower pale-brown ; the perichetial ones longer acuminate or subulate, entire ; the capsules are (unripe) more or less curved, the pedicel pale-red.

St. Paul Island, Behring Sea, August 3rd, 1891. (*J. M. Macoun.*)

37. LEPTOTRICHUM, Hampe.

(171.) **L. glaucescens**, Hampe.

Ounalaska Island, Behring Sea, 1891. (*J. M. Macoun.*)

38. TRICHOSTOMUM, Smith.

- (940.)
- T. (Timmiella) Vancouvericense**
- , (Broth.) Kindb.

Timiella Vancouvericensis, Broth. Bot. Centreblatt.

Differs from *Trichostomum flexisetum* (Bruch) Limpr. (*T. flexipes*, Bryol. Europ.) in its more robust stature, the shorter and slightly curved lid and the larger spores, about 0.012—0.014 mm.

On damp earth, Victoria, Vancouver Island. (*Dr. Reel.*)

39. DESMATODON, Brid.

- (173.)
- D. latifolius**
- , Brid.

St. Paul Island, Behring Sea. (*Palmer.*)

41. BARBULA, Hedw.

- (187.)
- B. tortuosa**
- , Web. & Mohr.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (190.)
- B. caespitosa**
- , Schwaegr.

On earth by rocks at Revelstoke, B.C. (*Macoun.*)

- (198.)
- B. subgracilis**
- , C. M. & Kindb. var.
- viridior**
- , Kindb. (n. var.)

Plants higher, about 1.5—2 cm. high, green and branching above, decolorate-brown below. Leaves when dry crispate, more papillose; costa green. Capsules not found.

On rocks along the Sydenham River, near Jones Falls, Owen Sound, Ont., September 17th, 1890. (*Macoun.*)

- (941.)
- B. vinealis**
- , Braun.; Lesq. & James, Mosses of N. America, 124.

On rocks, near the Whirlpool, Niagara Falls, Ont. (*Macoun.*)
White Bay, Newfoundland. (*Rev. A. Waghorne.*)

- (200.)
- B. fallax**
- , Hedw.

On rocks, wet with spray, Cañon of the Illicillewaet, at Revelstoke, B.C. (*Macoun.*) Drummond's No. 139 referred here belongs to the next species.

(942.) **B. pseudo-rigidula**, Kindb. (n. sp.)

B. rigidula, Canadian Musci, No. 412, in part.

Agrees with *Barbula rigidula* in the tufts being fuscous, the leaves from a short erect base patent or recurved, contorted when dry, long-lanceolate, revolute below, nearly smooth, basal cells pellucid and rectangular, costa brown, nearly filling the narrow acumen; differs in the leaf-borders not being thickened, the inner perichetial leaves from an oblong base, narrower acuminate with a long excurrent costa; the peristome pale and distinctly contorted.

On earth by a brook at Lytton, B.C., April 17th, 1889. (*Macoun.*)
(See No. 295.)

(205.) **B. spadicea**, Mitt.

On rocks along the Fraser River at Yale, B.C., December 9th, 1872. (*Macoun.*)

(207.) **B. brachyphylla**, Sulliv. var. **angustifolia**, C. M. & Kindb.

Tufts compact sparingly radiculose to the greater part, rusty-red, bright-green at the summit, 1-2 cm. high. Leaves shortly ovate-lanceolate, acute or subobtuse, indistinctly papillose, densely disposed, when dry appressed, borders reflexed nearly all around; cells small, round-quadrate; costa broad, reddish and percurrent. Barren.

(210.) **B. cylindrica**, Schimp.

Ounalaska Island, Behring Sea, 1891. (*J. M. Macoun.*)

(943.) **B. decursivula**, Kindb. (n. sp.)

Tufts rusty-red with green tops, about 2 cm. high. Stem radiculose below, not rigid; branches long and filiform. Leaves small, when dry loosely appressed, open when moist, very broad at the base, subovate or ovate-oblong, acute or subobtuse, nearly smooth or faintly papillose at back, loosely disposed, long-decurrent; borders reflexed nearly all around; cells pellucid, subquadrate, only the alar elongate; costa reddish, broad and percurrent. Barren.

This species, resembling *Barbula brachyphylla* in the short-leaves, &c., differs in the thinner branches and the leaves smaller, loosely disposed and long-decurrent.

On earth, on rocks at Hector, Rocky Mountains, August 15th, 1890. (*Macoun.*)

- (214.) **B. convoluta**, Hedw. var. **obtusata**, Kindb. (n. var.)

Differs in the leaves being broader, generally obtuse, rarely subacute, and not apiculate.

On limestone rocks at the base of the cliff, Owen Sound, Ont., September 16th, 1890. (Macoun.)

- (220.) **B. ruralis**, Hedw.

Shore of Lake Erie, at Port Colborne, Ont.; on dry rocks at Revelstoke, B.C. Peculiar forms of this species have been gathered on the east end of the Cypress Hills, Alberta; and on Mount Aylmer, north side of Devil's Lake, Rocky Mountains. (Macoun.)

- (222.) **B. aciphylla**, Bruch & Schimp.

On rocks at Battle Harbor, Labrador. (Rev. A. Waghorne.) Abundant on Mount Aylmer, Devil's Lake, Rocky Mountains, alt. 8,300 feet. (Macoun.)

- (223.) **B. megalocarpa**, Kindb.

On rocks "Dry Cañon, discharge of Devil's Lake, Rocky Mountains. (Macoun.)

- (944.) **B. læviuscula**, Kindb. (n. sp.)

Tufts brown, radiculose at the base of the leaves, 3-4 cm. high. Leaves narrow, lingulate, carinate, nearly smooth or indistinctly papillose at the recurved borders; lower marginal cells of the leaf-base hyaline, short-rectangular in 1-2 rows, median yellow and porose in 2-3 rows, inner larger, longer and hyaline; costa red, indistinctly papillose at back, denticulate and hyaline near the long hispid hair-point. Capsule subcylindric, attenuate at the base to the pedicel; peristomial tubes very much shorter than the pale teeth.

Differs from *Barbula ruralis* principally in the nearly smooth leaves, the narrower capsule and the thinner pedicel.

On rocks on the summit of Tunnel Mountain, Banff, Rocky Mountains, July 6th, 1890. (Macoun.)

- (945.) **B. (Syntrichia)** — ?

This is in a barren state and hence doubtful. It differs from *B. ruralis* in the leaves being emarginate, less reflexed at the borders and the hair-point less hispid, &c.

On rocks at the base of Sulphur Mountain, Banff, Rocky Mountains, June 28th, 1891. (Macoun.)

(227.) **B. papillinervis**, C. M. & Kindb.

On Bolster Rocks, Labrador. (*Rev. A. Waghorne.*)

44. GRIMMIA, Ehrh.(237.) **G. apocarpa**, Hedw.

White Bay and Trinity Bay, Newfoundland; on rocks, Battle Harbor, Labrador. (*Rev. A. Waghorne.*) St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*)

(238.) **G. gracilis**, Nees & Hornsch.

Coachman's Cove, Newfoundland. (*Rev. A. Waghorne.*) On dry limestone rocks at Owen Sound, Ont. (*Macoun.*)

(239.) **G. rivularis**, Nees & Hornsch.

On rocks subject to inundation along the Columbia River, one mile above Revelstoke, B.C. (*Macoun.*)

(240.) **G. alpicola**, Swartz.

On rocks, Kadiak Island, Alaska, 1891. (*J. M. Macoun.*)

(243.) **G. maritima**, Turn.

Western Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(244.) **G. cfassinervis**, C. Muell.

Ounalaska Island, Behring Sea, 1891. (*J. M. Macoun.*)

(258.) **G. torquata**, Grev.

Ounalaska Island, Behring Sea, 1891. (*J. M. Macoun.*)

(267.) **G. alpestris**, Schleich.

Avalanche Mountain, Selkirk Mountains, B.C.; on rocks, Mount Aylmer, Rocky Mountains; alt. 8,300 feet. (*Macoun.*)

(270.) **G. ovata**, Web. & Mohr.

Venison Tickle, Labrador. (*Rev. A. Waghorne.*)

(272.) **G. commutata**, Heuben.

On dry rocks, three miles below Hector, Rocky Mountains. (*Macoun.*)

- (274.) **C. montana**, Bruch & Schimp.

On rocks, summit of Mount Niblock, at Lake Agnes, Rocky Mountains. (*Macoun.*)

45. RACOMITRIUM, Brid.

- (278.) **R. patens**, Heuben.

Ounalaska and Attu islands, Behring Sea, 1891. (*J. M. Macoun.*)

- (279.) **R. aciculare**, Brid.

On rocks, Battle Harbor, Labrador; Grand Vâche, Newfoundland. (*Rev. A. Waghorne.*) Prince of Wales Island, Alaska, 1891. (*J. M. Macoun.*)

- (280.) **R. Nevil**, C. Muell.

On Atkah Island, Behring Sea, 1891. (*J. M. Macoun.*)

- (286.) **R. heterostichum**, Brid.

Cape Charles, Labrador. (*Rev. A. Waghorne.*)

- (288.) **R. affine**, Lindb.

Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*)

- (289.) **R. fasciculare**, Brid.

Grand Vâche, White Bay and Harbor Deep, Newfoundland; Squaw Island, Battle Harbor, Seal Island and Venison Tickle, Labrador. (*Rev. A. Waghorne.*) Ounalaska Island, Behring Sea, and Cape Vancouver, Alaska, 1891. (*J. M. Macoun.*)

- (293.) **R. microcarpum**, Brid.

Venison Tickle, Labrador; Green Pond and White Bay, Newfoundland. (*Rev. A. Waghorne.*)

Var. **Palmeri**, Kindb. (n. var.)

Differs in the leaves being long subulate, hairless, the upper cells longer and more confluent, the alar ones large and rectangular, the capsule shorter-pedicellate. Differs also from the related *Racomitrium Sudeticum* in the deeply cleft peristomial teeth, the narrow leaf-cells, &c.

St. Paul Island, Behring Sea. (*Palmer.*)

(294.) **R. lanuginosum**, Brid.

Near Venison Tickle, Labrador. (*Rev. A. Waghorne.*)

(295.) **R. canescens**, Brid.

On rocks, Seal Island and Venison Tickle, Labrador. (*Rev. A. Waghorne.*)

54. ULOTA, Mohr.

(319.) **U. intermedia**, Schimp.

Placentia Bay, White Bay and New Harbor, Newfoundland. (*Rev. A. Waghorne.*)

55. ORTHOTRICHUM, Hedw.

(326.) **O. anomalum**, Hedw.

On rocks at the Sulphur Springs, Banff, and at the east end of Devil's Lake, Rocky Mountains (*Macoun.*)

(328.) **O. nudum**, Dicks.

On limestone rocks, along the Ottawa River at Rockcliffe, April 16th, 1891. (*Macoun.*)

(946.) **O. Hallii**, Sulliv. & Lesq.; Lesq. & James, Mosses of N. America, 170.

On rocks (?) at Hector, Rocky Mountains. (*Macoun.*)

(345.) **O. brachytrichum**, Schimp.

On poplar trees on islands in the Columbia River at Revelstoke, B.C. (*Macoun.*)

(352.) **O. cylindrocarpum**, Lesq.

On rocks, "Dry Cañon," near the discharge of Devil's Lake, Rocky Mountains. (*Macoun.*)

56. ENCALYPTA, Schreb.

(363.) **E. vulgaris**, Hedw.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(947.) **E. Alaskana**, Kindb. (n. sp.)

Differs from *Encalypta longipes* principally in the capsule being striate and not apophysate, the peristome brown-red, appressed to the mouth in a wet state, the costa of the leaves nearly smooth. Monœcious. The lid of the capsule is obliquely rostrate. Calyptra not found. *Encalypta longipes* has an apophysate and quite smooth capsule, red peristome, always erect, and the costa very rough.

Mixed with a *Bryum* on earth, Ounalaska Island, Behring Sea, August 21st, 1891. (J. M. Macoun.)

(374.) **E. cucullata**, Kindb.

E. rhaptocarpa, Drumm. Musc. Bor.-Am., No. 52.

This is probably the above species. Rocks and banks, Rocky Mountains. (Drummond.)

58. TETRAPHIS, Hedw.(376.) **T. pellucida**, Hedw.

Placentia Bay and White Bay, Newfoundland; Deep Water Creek, Labrador. (Rev. A. Waghorne.)

62. TETRAPLODON, Bruch & Schimp.(387.) **T. mnioides**, Bruch & Schimp.

Indian Harbor, Venison Tickle, Battle Harbor and Seal Island, Labrador. (Rev. A. Waghorne.)

(389.) **T. urceolatus**, Bruch & Schimp.

Near Indian Harbor, Labrador. (Rev. A. Waghorne.)

65. PHYSCOMITRIUM, Brid.(948.) **P. platyphyllum**, Kindb. (n. sp.)

Lower leaves sublingulate, yellow-margined, serrate all around, with a percurrent costa; the upper very broad, ovate-acuminate, indistinctly margined, serrate above the middle, costa percurrent or short-excurrent; cells wide subhexagonal, the basal subrectangular, all hyaline. Calyptra mitriform. Capsule pyriforme; lid mamillate; pedicel (unripe) yellow, about 1 cm. long or shorter.

On earth, Metcalfe street, Ottawa. (Fletcher.) Has been referred to, *P. pyriforme* on page 102.

67. BARTRAMIA, Hedw.

(407.) **B. ithyphylla**, Brid.

White Bay, Newfoundland; Battle Harbor, Indian Harbor, and Squaw Island, Labrador. (*Rev. A. Waghorne.*)

(409.) **B. pomiformis**, Hedw.

St. Paul Island, Behring Sea. (*Palmer.*) White Bay, Newfoundland. (*Rev. A. Waghorne.*)

69. PHILONOTIS, Brid.

(416.) **P. fontana**, Brid.

Battle Harbor, Labrador; White Bay, Newfoundland. (*Rev. A. Waghorne.*)

72. MEESIA, Hedw.

(420.) **M. uliginosa**, Hedw.

Battle Harbor, Labrador. (*Rev. A. Waghorne.*)

75. LEPTOBRYUM, Schimp.

(427.) **L. pyriforme**, Schimp.

Venison Tickle, and Battle Harbor, Labrador. (*Rev. A. Waghorne.*)

76. WEBERA, Hedw.

(433.) **W. nutans**, Hedw.

Venison Tickle, and Battle Harbor, Labrador; Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*)

(446.) **W. cruda**, Schimp.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(452.) **W. albicans**, Schimp.

Battle Harbor, Labrador. (*Rev. A. Waghorne.*)

77. BRYUM, Dill.

(456.) **B. hæmatophyllum**, Kindb.

On wet rocks along Jupiter River, Anticosti. (*Macoun.*)

(460.) **B. pendulum**, Schimp.

B. caespiticium, Drumm. Musc. Bor.-Am., No. 265, in part.

Battle Harbor and Seal Islands, Labrador. (*Rev. A. Waghorne.*)
On cliffs along the Gaspé coast, Que. (*Macoun.*) Common in various situations. (*Drummond.*)

(472.) **B. uliginosum**, Bruch & Schimp.

Venison Tickle, and Fox Harbor, Labrador. (*Rev. A. Waghorne.*)

(474.) **B. intermedium**, Brid.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(480.) **B. pallescens**, Schleich.

B. turbinatum, Drumm. Musc. Bor.-Am., No. 266, in part.

Common in marshes and on moist banks. (*Drummond.*) Shore of Lake Huron at the Fishing Islands, and on earth at Owen Sound, Ont.; on earth at Cliche Creek and Blackwater River, B.C. (*Macoun.*)

(949.) **B. alpiniforme**, Kindb. (n. sp.)

Allied to *Bryum alpinum*, in habit, the leaves chlorophyllose, the quadrate basal cells, and in the red costa, &c.; differs in the leaves being smaller, marginate, loosely disposed, more distinctly decurrent, borders reflexed nearly all around, and the cells wider, also the upper hexagonal-oval, and the costa often more excurrent. Barren.

On rocks, islands in Lake Nepigon, Ont., July 14th, 1884. (*Macoun.*)

(488.) **B. Rauli**, Aust.

On rocks, Falls of St. Anne des Monts River, Gaspé Co., Que. (*Macoun.*)

(497.) **B. caespiticium**, Linn.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

For Vesuvius Pickle on page 128, read Venison Tickle.

(507.) **B. obtusifolium**, Lindb.

St. Paul Island, Behring Sea. (*Palmer.*)

(508.) **B. erythrophyllum**, Kindb.

On wet limestone rocks along the Moira above the railway bridge at Belleville, Ont. (*Macoun.*) St. Paul Island, Behring Sea. (*Palmer.*)

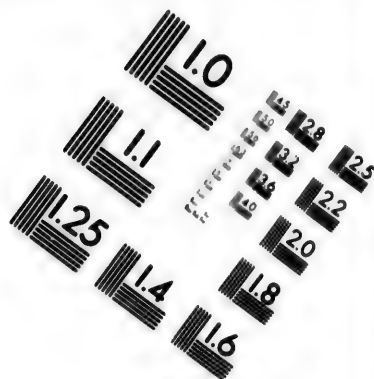
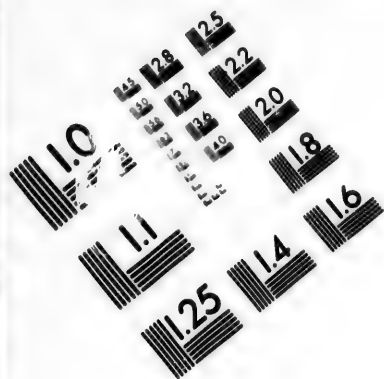
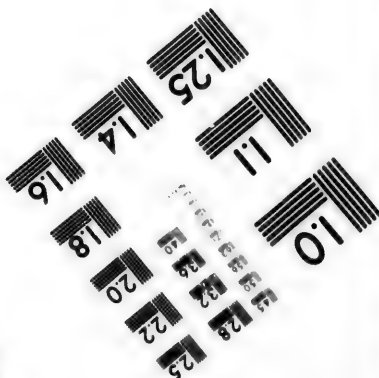
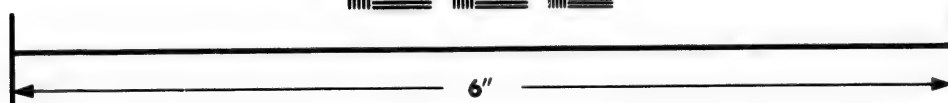
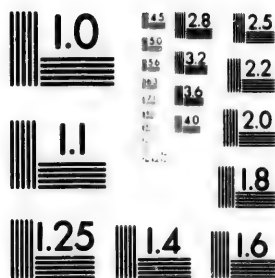


IMAGE EVALUATION TEST TARGET (MT-3)



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

14
13
12
11
10
9
8
7
6
5
4
3
2
1

10
9
8
7
6
5
4
3
2
1

(950.) **B. erythrophylloides**, Kindb. (n. sp.)

Nearly allied to *B. erythrophyllum*, agreeing in the leaves being loosely disposed, rose-red and not decurrent; differs in the leaves being quite immarginate, narrower, ovate-lanceolate, long-acuminate or acute; upper cells narrower; costa in the upper leaves somewhat long-excurrent, rigid. Barren.

By a spring in the Cypress Hills, Alberta, August 6th, 1880. (*Macoun.*)

The reference under *B. erythrophyllum* to the Illicillewaet Cañon belongs here.

(509.) **B. pallens**, Swartz.

B. turbinatum var. *pallens*, Drumm, Musc. Bor.-Am. No. 267.

Moist banks, among the Rocky Mountains. (*Drummond.*) On earth at the "Gap," Bow River Pass, Rocky Mountain. (*Macoun.*)

(510.) **B. Duvallii**, Voit. var. **Caspeanum**, Kindb. (n. var.)

Differs in the leaves being narrow-lanceolate, short-decurrent, margined to the greater part, sometimes faintly denticulate above; costa percurrent or short-decurrent.

Wet rocks along the St. Anne des Monts River, Gaspé Co., Que., August 16th, 1882. (*Macoun.*)

(511.) **B. pseudo-triquetrum**, Schwaegr.

In bogs, Porcupine Mountain, Man.; Telegraph Trail, west of Quesnel, B.C.; numerous varieties are in the bogs around Banff, Rocky Mountains. (*Macoun.*) White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(516.) **B. meseoides**, Kindb.

On earth along Jupiter River and Gunn River, Anticosti; and on mountains north of Devil's Lake, Rocky Mountains. (*Macoun.*)

79. MNIMUM, Linn.(532.) **M. rostratum**, Schwaegr.

On stones in a brook, Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

(539.) **M. orthorrhynchum**, Bruch & Schimp.

Battle Harbor, Labrador. (*Rev. A. Waghorne.*) On rocks, "Dry Cañon," discharge of Devil's Lake, Rocky Mountains. (*Macoun.*)

82. TIMMIA, Hedw.(562.) **T. Norvegica**, Zett.On House Mountain, near Lesser Slave Lake, N.W.T. (*Macoun.*)**85. PSILOPILUM, Brid.**(574.) **P. arcticum**, Brid.St. Paul Island, Behring Sea. (*Palmer.*)**86. POGONATUM, Beauv.**(577.) **P. dentatum**, Brid.On earth along the Canadian Pacific Railway at Albert Cañon, Selkirk Mountains. (*Macoun.*)Place *P. contortum*, Canadian Musci, No. 430, under *P. atrovirens*, as a synonym.**87. POLYTRICHUM, Linn.**(595.) **P. commune**, Linn. var. **perigoniale**, Bruch & Schimp.On banks in woods at Britannia, six miles west of Ottawa. (*Macoun.*)NOTE.—*Polytrichum formosum*, Hedw. = *P. attenuatum*, Menz. ; Kindb. Laubm. Schwed. Novw. p. 54.“*Polytrichum sylvaticum*, Menz. = *P. arcticum*, Swartz, Musc. Suec. = *P. ambiguum*, Michx. = *P. alpinum* var. *arcticum*,” C. Mueller, synops. muscor. frond. I. p. 211.**89. BUXBAUMIA, Hall.**(951.) **B. Indusiata**, D. E. Eaton, Coult. Bot. Gaz. Vol.On earth by rotten wood at Revelstoke ; and on rotten wood at Hastings, B.C. Referred to *B. aphylla* on page 157.**90. FONTINALIS, Dill.**(598.) **F. antipyretica**, Linn.In the west end of Loughborough Lake near Kingston, Ont. (*Prof. Lawson.*)

91. DICHELYMA, Myrin.

(606.) **D. obtusulum**, Kindb.

Fredericton, N.B. (*Prof. Fowler.*)

98. PTERICYNANDRUM, Hedw.

(623.) **P. filiforme**, Hedw.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

105. LESKEA, Hedw.

(637.) **L. nervosa**, Myrin.

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

109. PYLAISIA, Bruch & Schimp.

(652.) **P. polyantha**, Bruch & Schimp.

White Bay and Harbor Deep, Newfoundland. (*Rev. A. Waghorne.*)

110. HOMALOTHECIUM, Bruch & Schimp.

(661.) **H. corticola**, Kindb.

Tufts dense, glossy. Stems pinnate, creeping; branches densely crowded, curved. Stem-leaves ovate, abruptly narrowed to the recurved or straight acumen; branch-leaves ovate-oblong acute or short-acuminate, straight; all leaves more or less denticulate and reflexed all around; alar cells quadrate, not numerous, the marginal ones also quadrate, the other oblong-rhomboidal, costa stout, vanishing above the middle; perichetial leaves entire, long-acuminate. Capsule cylindric-oblong, large, about 3 mm. long, slightly curved; teeth yellow; segments with a high basilar membrane; lid short-apiculate; pedicel rough, 1 cm. long. Monœcious.

Very much larger than *Homalothecium subcapillatum* and resembling *Camptothecium pinnatifidum*.

114. PSEUDOLESKEA, Bruch & Schimp.

(679.) **P. atrovirens**, Dicks.

On rocks, White Bay, Newfoundland. (*Rev. A. Waghorne.*)

115. HETEROCLADIUM, Bruch & Schimp.

(687.) **H. dimorphum**, Brid.

Seal Cove and Western Cove, White Bay, Newfoundland. (Rev. A. Waghorne.)

116. THUIDIUM, Schimp.

(695.) **T. gracile**, Bruch & Schimp.

White Bay, Newfoundland. (Rev. A. Waghorne.)

119. BRACHYTHECIUM, Schimp.

(734.) **B. Starkii**, Bruch & Schimp.

Western Cove and Coachman's Cove, White Bay, Newfoundland. (Rev. A. Waghorne.)

(735.) **B. ædipodium**, Lesq. & James.

Cilia appendiculate; pedicel minutely rough.

Shaded ground, Fox River, and Ste. Anne des Monts River, Gaspé Co., Que. (Macoun.)

(736.) **B. curtum**, Lindb.

Grand Vâche, Newfoundland. (Rev. A. Waghorne.) Swamps, South-West Point, Anticosti. (Macoun.)

(737.) **B. reflexum**, Bruch & Schimp.

Little Bay Island, Harbor Deep and Western Cove, Newfoundland. (Rev. A. Waghorne.)

(751.) **B. populeum**, Bruch & Schimp.

White Bay, Newfoundland. (Rev. A. Waghorne.)

121. ISOTHECIUM, Brid.

(758.) **I. myosuroides**, Brid.

On stones and the bases of trees at Yarmouth, N.S., June 20th, 1883. (Macoun.)

(760.) **I. Cardoti**, Kindb.

Rhizome creeping; secondary stems pinnate, also ligneous, often curved, sometimes bearing rigid, long and at the apex branching flagella.

Stem-leaves ovate-lanceolate, subulate-acuminate, faintly denticulate below, the acumen serrate and twisted above; coils often yellowish, all long and narrow, except the basal, the alar and inner basal dark-yellow or orange, quadrate or rectangular; costa stout reaching to $\frac{3}{4}$; branch-leaves shorter-acuminate, sharply serrate above the middle, borders often faintly reflexed to the acumen. Perigonial leaves sub-ovate, reddish at the base; costa fine and short; antheridia 3—4. Perichetial leaves nerveless, from a short, ovate base suddenly tapering to the much longer, subulate, acumen; vagina long-ciliate above. Capsule oval, horizontally patent or cernuous, teeth pale-yellow; segments rimose in the middle, prolonged into long and smooth cilia; pedicel smooth, about 1 cm. long, arcuate above. Monœcious.

This fine species differs from *I. myosuroides*, in the doubly larger leaves, the stout costa, the robust ligneous stem, the rigid flagella, &c.

122. EURHYNCHIUM, Schimp.

(771.) **E. Vaucheri**, (Schimp.)

On rocks, South-West Point, Anticosti; on rocks Lake Winnipegosis, Man. (*Macoun.*)

(772.) **E. pilliferum**, (Schreb.)

White Bay, Newfoundland. (*Rev. A. Waghorne.*)

(778.) **E. Stokesii**, (Turn.)

Little Bay Island, Newfoundland. (*Rev. A. Waghorne.*)

123. RAPHDOSTECIUM, Lesq. & James.

(786.) **R. Jamesii**, (Sulliv.)

Grande Vache and Western Cove, White Bay, Newfoundland. (*Rev. A. Waghorne.*) On stones near Buckingham, Que. (*Macoun.*)

124. RHYNCOSTECIUM, Schimp.

(790.) **R. deplanatum**, Schimp.

On earth at Truro, N.S. (*Macoun.*)

(791.) **R. serrulatum**, (Hedw.)

Seal Cove, Harbor Deep and Western Cove, Newfoundland. (*Rev. A. Waghorne.*)

126. **PLAGIOTHECIUM, Schimp.**

- (952.)
- P. decursivifolium**
- , Kindb. (n. sp.)

Hypnum latebricola, Canadian Mus., No. 304, in part.

Intermediate between *P. latebricola* and *P. pseudo-latebricola*. Agrees with the last in the branches being complanate, the leaves distichous, the capsule oblique; differs in the leaves being broader, short-pointed, decurrent, the alar cells not distinct but the decurrent ones rectangular, the capsule in a dry state arcuate and finally furrowed, the lid longer often curved.

On cedar (*Thuja occidentalis*) stumps in a swamp, 5 miles west of Belleville, Ont. The specimens (fruiting) were named *P. Passaicense* by Austin, and probably distributed under that name by him. (Macoun.)

- (953.)
- P. attenuatirameum**
- , Kindb. (n. sp.)

Tufts green, faintly shining, loose, with few rhizoids. Primary stem very short; branches elongate, long-attenuate, finally flagelliform. Leaves subdistichous, the lower broadly ovate, obtuse or obtusate, entire long-decurrent, concave, recurved at the borders from the base to above the middle, at least at the one side; cells chlorophyllose, somewhat dilated, the lowest very much wider and shorter, nearly uniform; costa generally short and double, rarely simple and reaching to the middle; the other leaves gradually smaller, narrower and more acute or acuminate. Barren.

On rocks in Gilmour's Park, Chelsea, Que., September 6th, 1889. (Macoun.)

128. **HYPNUM, Linn.**

- (836.)
- H. hispidulum**
- , Brid.

White Bay, Newfoundland. (Rev. A. Waghorne.)

- (873.)
- H. fastigiatum**
- , Brid.

On trees in woods at Owen Sound, Ont. (Macoun.)

- (874.)
- H. hamulosum**
- , Bruch & Schimp.

On logs, Jupiter River, Anticosti; on logs, Gaspé Co., Quebec. (Macoun.)



Am

And

INDEX.

	PAGE.
Acrocarpi	11
<i>Aloina</i> , C. Muell.	49
<i>Alsia</i> , Sulliv.	161
<i>abietina</i> , Sulliv.	161
<i>Macounii</i> , Kindb.	161
<i>Amblyodon</i> , Beauv.	108
<i>dealbatus</i> , Beauv.	108
<i>Amblystegium</i> , Schimp.	216
<i>adnatum</i> , Hedw.	220
<i>compactum</i> , Bruch & Schimp.	221
<i>confervoides</i> , Bruch & Schimp.	218
<i>curvipes</i> , Guemb.	220
<i>dissitifolium</i> , Kindb.	220
<i>distantifolium</i> , Kindb.	222
<i>fenestratum</i> , Kindb.	217
<i>fluviatile</i> , Bruch & Schimp.	220
<i>irriguum</i> , Bruch & Schimp.	220
var. <i>spinifolium</i> , Lesq. & James.	220
<i>minutissimum</i> , Sulliv. & Lesq.	216
<i>orthocladon</i> , Beauv.	219
<i>porphyrrhizum</i> , Schimp.	219
<i>riparium</i> , Bruch & Schimp.	221
var. <i>fluitans</i> , Lesq. & James.	222
<i>serpens</i> , Bruch & Schimp.	218
<i>serpens</i> var. <i>Columbiae</i> , Kindb.	
var. <i>lutescens</i> , Kindb.	218
var. <i>xanthodictyon</i> , Kindb.	218
<i>speirophyllum</i> , Kindb.	217
<i>Sprucei</i> , Bruch & Schimp.	217
<i>subcompactum</i> , C. M. & Kindb.	221
<i>subtile</i> , Bruch & Schimp.	217
<i>tenuifolium</i> , Kindb.	217
<i>vacillans</i> , Sulliv.	222
<i>varium</i> , Lindb.	219
<i>Wollei</i> , Kindb.	222
<i>Yurtzkei</i> , Schimp.	218
<i>Amphoridium</i> , Schimp.	80
<i>caespitosum</i> , Lesq. & James.	81
<i>Californicum</i> , Lesq. & James.	80
<i>Lapponicum</i> , Schimp.	80
<i>Mougeotii</i> , Schimp.	80
<i>Sullivanii</i> , Can. Musc.	80
<i>Andreaca</i> , Ehrh.	9, 256
<i>alpestris</i> , Schimp.	10
<i>Blyttii</i> , Schimp.	10
<i>crassinervia</i> , Bruch.	10
<i>Huntii</i> , Limpr.	10
<i>Macounii</i> , Kindb.	10

	PAGE.
<i>nivalis</i> , Hook.	10
<i>obovata</i> , Thed.	10
<i>parvifolia</i> , C. Muell.	11
<i>petrophila</i> , Ehrh.	9, 256
<i>petrophila</i> var. <i>alpestris</i> , Thed.	10
<i>Rothii</i> , Web. & Mohr.	10
Andreaceae	9
<i>Angstroemia</i> , Bruch & Schimp.	20
<i>longipes</i> , Bruch & Schimp.	20
<i>Anietangium ciliatum</i> , Drumm.	78
<i>imberbe</i> , Drumm.	78
<i>Anodus Donianus</i> , Bruch & Schimp.	41
<i>Anoetangium</i> , Schwaegr.	14
<i>compactum</i> , Schwaegr.	14
<i>Anomodon</i> , Hook. & Tayl.	170
<i>apiculatus</i> , Bruch & Schimp.	171
<i>attenuatus</i> , Hueben.	171
<i>heterodeus</i> , Kindb.	172
<i>obtusifolius</i> , Bruch & Schimp.	171
<i>rostratus</i> , Schimp.	170
<i>viticulosus</i> , Hook. & Tayl.	171
<i>viticulosum</i> , Drumm.	171
<i>Antitrichia</i> , Brid.	165
<i>Californica</i> , Sulliv.	166
<i>curtipendula</i> , Brid.	165
var. <i>gigantea</i> , Sulliv. & Lesq.	165
<i>tenella</i> , Kindb.	165
<i>Archidium</i> , Brid.	12
<i>Ohioense</i> , Schimp.	12
<i>Arrhenopterum heterostichum</i> , Drumm.	146
<i>Astomum</i> , Hampe.	12
<i>crispum</i> , Hampe.	12
<i>Drummondii</i> , Kindb.	12
<i>Atrichum</i> , Beauv.	147
<i>angustatum</i> , Bruch & Schimp.	147
<i>crispum</i> , James.	148
<i>leiophyllum</i> , Kindb.	148
<i>Lescurii</i> , James.	147
<i>parallelum</i> , Mitt.	148
<i>rosulatum</i> , C. M. & Kindb.	148
<i>Selwynii</i> , Aust.	147
<i>undulatum</i> , Beauv.	147
<i>xanthopelma</i> , Can. Musc.	148
Aulacomniaceae	144
<i>Aulacomnium</i> , Schwaegr.	144
<i>androgynum</i> , Schwaegr.	144
<i>heterostichum</i> , Bruch & Schimp.	146

	PAGE.		PAGE.
palustre, Schwaegr.....	144	rigidula, Schimp.....	54
var. imbricatum, Bruch		rigidula, Can. Musc.....	55
& Schimp.....	145	robustifolia, C. M. & Kindb..	56
var. laxifolium, Kindb..	145	robustifolia, C. M. & Kindb..	55
var. polycephalum, Bruch		rotundo-emarginata, C. M. &	
& Schimp.....	145	Kindb.....	60
turgidum, Schwaegr.....	145	rubiginosa, Mitt.....	55
Barbula, Hedw.....	49, 263	rubiginosa, Can. Musc.....	56
aciphylla, Bruch & Schimp..	59, 265	rufa, Lov.....	55
alpina, Bruch & Schimp.....	58	ruralis, Hedw.....	58, 265
ambigua, Bruch & Schimp..	49	spadicea, Mitt.....	55, 264
amplexa, Lesq.....	51	sparsidens, C. M. & Kindb..	54
amplexa.....	62	subcarnifolia, C. M. & Kindb.	52
angustata, Wils.....	58	subgracilis, C. M. & Kindb..	53, 263
brachyangia, C. M. & Kindb.	50	subicnadophila, C. M. &	
brachyphylla, Sulliv. var. an-		Kindb.....	53
gustifolia, Kindb.....	55, 264	subicnadophila.....	54
brevirostris, Bruch & Schimp.	50	subulata, Beauv.....	57
caespitosa, Schwaegr.....	51, 263	subulata var. angustata, Schimp	58
carnifolia, C. M. & Kindb....	52	subulata var. longifolia, Kindb	58
carnifolia.....	60	tortellifolia, C. M. & Kindb..	56
chrysopoda, C. M. & Kindb..	57	tortuosa, Web. & Mohr....	50, 263
circinnatula, C. M. & Kindb..	56	tortuosa.....	51
convoluta, Hedw.....	57	unguiculata, Hedw....	55
var. obtusata, Kindb.....	265	virescens.....	56
cylindrica, Tayl.....	57	Vahlana, Schultz.....	51
cylindrica, Can. Musc.....	56	vinealis, Braun.....	263
cylindrica, Schimp.....	56, 264	Bartramia, Hedw.....	104, 270
decursivula, Kindb.....	264	breviseta, Lindb.....	106
elata.....	56	circinnulata, C. M. & Kindb..	105
fallax, Hedw.....	53, 263	fontana, Drumm.....	106
fallax.....	54, 55	glaucoviridis, C. M. & Kindb.	105
flexifolia, Can. Musc.....	56	gracilis, Drumm.....	104
fragilis, Bruch & Schimp.....	51	Halleriana, Hedw.....	105
gracilis, Schwaegr.....	52	ithyphylla, Brid.....	104, 270
gracilis var. squandosa, Kindb	53	Menziesii, Turn.....	104
horridifolia, C. M. & Kindb..	57	Oederiana, Swatz.....	104
horridifolia.....	56	Oederiana var. minor, Kindb.	105
icnadophila, Bryol. Europ....	53	pomiformis, Hedw.....	105, 270
inclinatula, C. M. & Kindb..	50	subulata, Bruch & Schimp..	104
inclinata, Hedw.....	51	Bartramieae	104
laevipila, Bruch & Schimp....	59	Blindia, Bruch & Schimp.....	42
laevipila, Can. Musc.....	60	acuta, Bruch & Schimp.....	42
laeviuscula, Kindb.....	265	Brachythecium, Schimp.....	190
lato-exeisa, C. M. & Kindb....	60	acuminatum, Beauv.....	191
lato-exeisa, C. M. & Kindb....	59	var. setosum, Sulliv. &	
leptotricha, C. M. & Kindb..	60	Lesq.....	192
macrorhyncha, Kindb.....	50	acutum, Sulliv.....	193
megalocarpa, Kindb.....	59, 265	albicans, Bruch & Schimp..	194
melanocarpa, C. M. & Kindb..	54	asperrimum, Mitt.....	200
mucronifolia, Bruch & Schimp	58	campestre, Bruch & Schimp..	200
Muelleri, Bruch & Schimp..	60	cirrhosum, Schimp.....	194
nitidum, Jur.....	52	collinum, Bruch & Schimp..	196
onea, C. M. & Kindb.....	55	Columbico-rutabulum, Kindb	198
papillinervis, C. M. & Kindb..	266	curtum, Lindb.....	197, 275
platyneura, C. M. & Kindb..	52	cyrtophyllum, Kindb.....	191
pseudo-rigidula, Kindb.....	264	digastrum, C. M. & Kindb....	190
recurvifolia, Schimp.....	54	Donnellii, Aust.....	195
rigida, Schultz.....	49	gemmascens, C. M. & Kindb.	195
rigida.....	50		

GE.

54

55

56

55

60

55

56

55

265

264

54

52

263

53

54

57

58

58

56

263

51

55

56

51

263

270

106

105

106

105

104

105

270

104

104

105

270

104

104

42

42

190

191

&

192

193

194

200

200

194

196

198

275

191

190

195

195

195

PAGE

glaciale, Bruch & Schimp....	200
glareosum, Bryol. Europ....	193
harpidioides, C. M. & Kindb....	194
laetum, (Brid.).....	190
levisetum, Kindb....	193
lamprochryseum, C. M. & Kindb.....	199
leucoglaucom, C. M. & Kindb....	198
mammilligerum, Kindb....	192
mirabundum, C. M. & Kindb....	199
nanopes, C. M. & Kindb....	201
œdipodium, (Mitt.).....	197, 275
œdipodium, Can. Musc.....	197
platycladum, C. M. & Kindb....	195
plumosum, Bruch & Schimp....	202
populeum, Bruch & Schimp....	201, 275
pseudo-albicans, Kindb....	194
pseudo-collinum, Kindb....	196
reflexum, Bruch & Schimp....	197, 275
revulare, Bruch & Schimp....	200
var. obtusulum, Kindb....	201
revulare * Nova-Brunsvicia, Kindb.....	201
Rœlli, Ren. & Card.....	193
rutabuliforme, Kindb....	198
Rutabulum, Bruch & Schimp....	197
salebrosum, Bruch & Schimp....	192
spurio-acuminatum, C. M. & Kindb.....	191
spurio-rutabulum, C. M. & Kindb.....	197
Starkii, Bruch & Schimp....	196, 275
trachypodium, (Brid.).....	194
turgidum, Hartm.....	202
vallium, Sulliv. & Lesq.....	200
volutinum, Bruch & Schimp....	196
Braunia, Bruch & Schimp....	79
Californica, Lesq.....	79
var. pilifera, Lesq. & James.....	79
Bryaceæ	110
Bryaceæ	11
Bryum, Dill.....	118, 270
acutiusculum, C. Muell.....	135
affine, Drumm.....	138
alpiniforme, Kindb.....	271
alpinum, Linn.....	125
angustirete, Kindb.....	119
ancectangiaceum, C. M. & Kindb.....	130
archangelicum, Schimp.....	120
arcticum, Bruch & Schimp....	118
argenteum, Linn.....	127
var. lanatum, Bruch & Schimp.....	127
atropurpureum, Wahl.....	125
Atwateriæ, C. Muell.....	127
bimum, Schreb.....	123
var. angustifolium, Kindb....	123

PAGE

Blindii, Bruch & Schimp....	125
brachyneuron, Kindb.....	120
Breidleri, Can. Musc.....	117
Brownii, Bruch & Schimp....	119
bullatum, C. Muell.....	135
caespitium, Linn.....	128, 271
caespitium, Drumm.....	271
calophyllum, R. Br.....	121
capillare, Linn.....	130
var. breviscapitatum, Kindb.....	131
capitellatum, C. M. & Kindb....	127
carneum, Drumm.....	117
var. pulchellum, Drumm.....	115, 116
cirrhatum, Hoppe & Hornsch....	122
var. megalosporum, Kind....	122
concinatum, Spruce.....	135
cuspidatum, Drumm.....	136
cyclophyllum, Bruch & Schimp....	131
dealbatum, Drumm.....	108
demissum, Drumm.....	136
denticulatum, Kindb.....	133
Donianum, Kindb.....	130
Duvallii, Voit.....	132
var. Gaspéanum, Kindb....	272
var. lato-decurrans, C. M. & Kindb.....	132
Edwardsianum, C. M. & Kindb....	120
elegans, Esenb.....	131
elongatum, Drumm.....	116
erubescens, Kindb.....	118
erythrophyloides, Kindb....	272
erythrophyllum, Kindb....	131, 271
fallax, Milde.....	121
flexuosum, Aust.....	121
Froudei, Kindb.....	120
haematocarpum, C. M. & Kindb.....	125
haematophyllum, Kindb....	118, 270
heteroneuron, C. M. & Kindb....	130
hydrophilum, Kindb.....	133
inclinatum, Bruch & Schimp....	120
intermedium, Brid.....	122, 271
Knowltoni, Barnes.....	124
Labradorensis, Philib.....	122
lacustre, Brid.....	121
lato-decurrans, Can. Musc....	132
leucolomatum, C. M. & Kindb....	123
lucidum, James.....	116
Macounii, Aust.....	127
mammilligerum, Kindb.....	122
marginatum, Drumm.....	141
mesooides, Kindb.....	133, 272
microcephalum, C. M. & Kindb....	134
microstegium, Bryol. Europ....	123
microerythrocarpum, C. M. & Kindb.....	124
microglobum, C. M. & Kindb....	129
miniaturum, Lesq.....	126

	PAGE		PAGE
<i>miniaturum</i> , Can. Musc.....	127	<i>Zierii</i> , Drumm	136
<i>Muehlenbeckii</i> , Bruch & Schimp	125	<i>Buxbaumia</i> , Hall.....	157, 273
<i>Muehlenbeckii</i> , Lessq. & James.....	125	<i>aphylla</i> , Linn.....	157
<i>murale</i> , Can. Musc.....	124	<i>indusiata</i> , D.C. Eaton	273
<i>nitidulum</i> , Lindb.....	123	<i>Callergon</i> , Lessq. & James.....	245
<i>nudans</i> , Drumm.....	112	<i>Camptothecium</i> , Schimp.....	188
<i>nutans</i> var. <i>minor</i> , Drumm	116	<i>tenue</i> , Mitt.....	188
<i>obconicum</i> , Can. Musc.....	130	<i>Ameure</i> , Ren. & Card.....	188
<i>obtusifolium</i> , Lindb.....	131, 271	<i>anreum</i> , Schleich.....	190
<i>occidentale</i> , Can. Musc.....	122	<i>fulgescens</i> , Mitt.....	188
<i>ovneum</i> , Blytt.....	121	<i>hamatidens</i> , Kindb.....	189
<i>oligochloron</i> , C. M. & Kindb.....	129	var. <i>tenue</i> , Kindb.....	189
<i>Ontariense</i> , Kindb.....	135	<i>lutescens</i> , Bruch & Schimp.....	188
<i>pallens</i> , Swartz.....	132, 272	<i>megaptilum</i> , Can. Musc.....	200
<i>pallescens</i> , Schleich.....	123, 271	<i>Nevadense</i> , Lessq.....	188
var. <i>longifolium</i> , Kindb.....	124	<i>nitens</i> , Schimp.....	189
var. <i>laxifolium</i> , Kindb.....	124	<i>Nuttallii</i> , Bruch & Schimp.....	188
<i>palustre</i> , Drumm	144	<i>Campylium</i> , Linn.....	222
<i>pendulum</i> , Schimp	119, 271	<i>Campylopus</i> , Brid.....	35
<i>percurrentinerve</i> , Kindb.....	126	Schimperi, Milde.....	35
<i>percurrentinerve</i> , Kindb.....	126	<i>Campylosteleum</i> , Bruch & Schimp	42
<i>provinciale</i> , Can. Musc.....	130	<i>saxicola</i> , Bruch & Schimp.....	42
<i>pseudotriquetrum</i> .		<i>Catoscopium</i> , Brid.....	108
Schwaegr.....	132, 272	<i>nigratum</i> , Brid.....	108
var. <i>hyalodontium</i> , C. M. & Kindb.....	133	<i>Ceratodon</i> , Brid.....	38, 261
<i>punctatum</i> , Drumm.....	142	conicus, Lindb.....	39
<i>purpurascens</i> , Bruch & Schimp.....	119	<i>heterophylla</i> , Kindb.....	261
<i>pygmaeo-alpinum</i> , C. M. & Kindb.....	126	minor, Aust.....	39
<i>pyriforme</i> , Drumm.....	110	<i>purpureus</i> , Brid.....	38, 261
<i>Rauli</i> , Aust.....	125, 271	var. <i>xanthopus</i> , Sulliv.....	39
<i>roseum</i> , Schreb.....	134	Ceratodontes	38
<i>rubicundulum</i> , C. M. & Kindb.....	129	<i>Cinclidium</i> , Swartz.....	144
<i>ruticans</i> , Bruch & Schimp.....	116	<i>stygium</i> , Swartz.....	144
<i>Schleicheri</i> , Schwaegr.....	134	<i>stygium</i> , Drumm.....	143
<i>simplex</i> , Kindb.....	135	<i>subrotundum</i> , Lindb.....	144
<i>spinosum</i> , Drumm.....	141	<i>subrotundum</i> , Can. Musc.....	144
<i>squarrosus</i> , Drumm.....	110	<i>Cinclidotus</i> , Beauv.....	61
<i>stenotrichum</i> , C. Muell.....	135	fontinaloides, Beauv.....	61
<i>subpurpurascens</i> , Kindb.....	119	<i>Climacium</i> , Web. & Mohr.....	178
<i>subrotundum</i> , Brid.....	124	Americanum, Brid.....	178
<i>synoico-euspicium</i> , C. M. & Kindb.....	128	dendroides, Web. & Mohr.....	178
<i>teres</i> , Lindb.....	124	Ruthenicum, Lindb.....	179
<i>torquescens</i> , Bruch & Schimp	134	<i>Conomitrium</i> , Mont.....	38
<i>trichodes</i> , Drumm.....	109	<i>Hallianum</i> , Can. Musc.....	38
var. <i>longica</i> , Drumm.....	108	<i>Julianum</i> , Mont.....	38
var. <i>minor</i> , Drumm.....	109	<i>Conostomum</i> , Swartz.....	106
<i>triquetrum</i> , Drumm.....	109	boreale, Swartz.....	106
<i>turbinatum</i> , Schwaegr.....	133	<i>Coscinodon</i> , Spreng.....	79
<i>turbinatum</i> , Drumm.....	123, 271	pulvinatus, Spreng.....	79
var. <i>pallens</i> , Drumm.....	272	<i>Cratoneuron</i> , Sulliv.....	230
<i>turgidum</i> , Drumm.....	145	<i>Ctenidium</i> , Mitt.....	233
<i>uliginosum</i> , Bruch & Schimp	121, 271	<i>Ctenium</i> , Sulliv.....	233
<i>Vancouveriense</i> , Kindb.....	129	<i>Cylindrothecium</i> , <i>brevistum</i> , Bruch & Schimp.....	177
<i>Warnum</i> , Can. Musc.....	120	<i>cladorrhizans</i> , Schimp.....	176
		<i>compressum</i> , Bruch & Schimp.....	178
		<i>Drummondii</i> , Can. Musc.....	177, 245
		<i>seductrix</i> , Sulliv.....	178

	PAGE.		PAGE.
Cynodontium, Schimp.	16, 257	squarrosa, Schimp.	21
alpestre, Wahl.	16	subulata, Schimp.	22, 258
gracilescens, Schimp.	16	varia, Schimp.	21, 258
gracilescens, Can. Musc.	17	Dicranodontium, Bruch & Schimp.	35
var. alpestre, Schimp.	16	longirostre, Bruch & Schimp.	35
polycarpum, Schimp.	17	Dicranoweisia, Lindb.	15, 256
polycarpum, var. strumiferum, Schimp.	17, 257	cirrhata, Lindb.	15
Schisti, Schimp.	16	crispula, Lindb.	15, 256
strumiferum, De Not.	17	obliqua, Kindb.	256
strumulosum, C. M. & Kindb.	16	Dicranum, Hedw.	23, 258
subalpestre, Kindb.	17, 257	adiantoides, Drumm.	37
virens, Schimp.	17, 257	albicans, Bruch & Schimp.	32
var. serratum, Bruch & Schimp.	18, 257	var. denticulatum, Kindb.	261
var. Waldenbergii, Bruch Schimp.	18	angustifolium, Kindb.	26, 259
Waldenbergii, (Brid.)	18, 257	arcticum, Schimp.	23
var. compactum, (Schimp.)	18, 257	Bergeri, Bland.	33, 261
Desmatodon, Brid.	47, 263	Blyttii, Bruch & Schimp.	24
atrovirens, Smith.	48	Bonjeani, De Not.	32
camptothecius, Kindb.	48	Bonjeani, De Not.	33
cernuus, Bruch & Schimp.	48	brachycaulon, Kindb.	34
var. xanthopus, Kindb.	48	brevifolium, Lindb.	30, 260
latifolius, Brid.	47, 263	bryoides, Drumm.	35
latifolius, Can. Musc.	48	Canadense, Kindb.	36
Laureri, Bruch & Schimp.	49	Columbica, Kindb.	32
nervosus, Bruch & Schimp.	48	congestiforme, C. M. & Kindb.	29
nervosus, Lesq. & James.	48	congestum, Brid.	29, 259
obliquus, Bruch & Schimp.	49	congestum, Brid.	31
obtusifolius, Schimp.	48	crispulum, C. M. & Kindb.	27
Porteri, James.	47	crispum, Drumm.	26
subtorquescens, C. M. & Kindb.	48	dipteroneuron, C. Muell.	34
Systylus, Bruch & Schimp.	47	Drummondii, C. Muell.	33, 261
Dichelyma, Myrin.	159, 274	var. trachyneuron, Kindb.	34, 261
capillaceum, Bruch & Schimp.	160	Drummondii, C. Muell.	30
var. elongatum, Kindb.	160	elongatum, Schwaegr.	31, 260
cylindricarpum, Aust.	160	elongatum, Schwaegr.	25
longinerve, Kindb.	230	var. minor, Drumm.	24, 260
Nova Brunsvica, Can. Musc.	159	flagellare, Hedw.	25
obtusulum, Kindb.	159, 274	fragilifolium, Lindb.	31, 260
pallidum, Bruch & Schimp.	160	fulvellum, Smith.	23
uncinatum, Mitt.	160	fulvum, Hook.	24
Dichodontium, Schimp.	19, 258	fuscescens, Turn.	29, 259
flavescens, Lindb.	19	var. brevirostre, Kindb.	30
pellucidum, Schimp.	19, 28	fuscescens, Lesq. & James.	29
var. fagi-montanum, Branthw.	19, 258	glaucom, Drumm.	38
var. serratum, Schimp.	19	gracilescens, Aust.	17
Dicranella, Schimp.	20, 258	Grœnlandicum, Brid.	31
cerviculata, Schimp.	21	Grœnlandicum, Lämpr.	31
crispa, Schimp.	20	heteromallum, Drumm.	22
Grevilleana, Schimp.	20, 258	hyperboreum, Smith.	23
heteromalla, Schimp.	22, 258	julaceum, Drumm.	20
parvula, Kindb.	21	Labradoricum, C. Muell.	25
rufescens, Schimp.	22, 258	latifolium, Drumm.	47
Schreberi, Schimp.	20	leioneuron, Kindb.	27
var. occidentalis, Can. Musc.	20	leucobasis, C. M. & Kindb.	30, 260
		longifolium, Hedw.	31
		majus, Turn.	27
		majus, Turn.	30
		microcarpum, Drumm.	18
		Miquelonense, Ren. & Card.	25

	PAGE.		PAGE.
<i>molle</i> , Wils.....	23, 258	<i>latifolium</i> , Drumm.....	48
<i>montanum</i> , Hedw.....	24, 259	<i>luridus</i> , Hornsch.....	44
<i>Muehlenbeckii</i> , Bruch & Schimp.....	30	<i>oblongifolium</i> , Drumm.....	48
<i>neglectum</i> , (Limpr.).....	260	<i>purpureum</i> , Drumm.....	38
<i>osmundoides</i> , Turn.....	37	<i>rigidulum</i> , Drumm.....	54
<i>palustre</i> , Lesq. & James.....	32	<i>rubellus</i> , Bruch & Schimp.....	44, 262
<i>pellucidum</i> , Drumm.....	53, 258	<i>rufus</i> , Lorentz.....	44
<i>plano-alare</i> , C. M. & Kindb.....	31	<i>trifarium</i> , Drumm.....	44
<i>polycarpum</i> , Drumm.....	257	<i>tortile</i> , Drumm.....	45
<i>rhabdocarpum</i>	29	<i>Diphyscium</i> , Mohr.....	157
<i>Richardsoni</i> , Drumm.....	18	<i>foliosum</i> , Mohr.....	157
<i>rugosum</i> , Kindb.....	33	<i>Dissodon</i> , Grev. & Arn.....	98
var. <i>rugulosum</i> , Kindb.....	33	<i>Froelichianus</i> , Grev. & Arn.....	98
<i>Sauteri</i> , Schimp. var. <i>pachytrichum</i> , Kindb.....	260	<i>Hornschuchii</i> , Grev. & Arn.....	98
<i>Schraderi</i> , Web. & Mohr.....	33	<i>splachnoides</i> , Grev. & Arn.....	98
<i>Schreberianum</i> , Drumm.....	20	<i>Distichium</i> , Bruch & Schimp.....	39, 262
<i>scoparium</i> , Hedw.....	28, 259	capillaceum, Bruch & Schimp.....	39, 262
var. <i>pallidum</i> , C. Muell.....	29	inclinatum, Bruch & Schimp.....	40, 262
var. <i>scopariiforme</i> , Kindb.....	28, 259	<i>Macounii</i> , C. M. & Kindb.....	40
<i>scoparium</i> , Hedw.....	27, 33, 29	<i>Drepanium</i> , C. Muell.....	234
<i>Scottianum</i> , Drumm.....	17	<i>Drummondia</i> , Hook.....	81
<i>spadiceum</i> , Zett.....	260	clavellata, Hook.....	81
<i>spurium</i> , Hedw.....	34	var. <i>Canadensis</i> , Kindb.....	81
<i>spurium</i> , Can. Musc.....	34	<i>Encalypta</i> , Schreb.....	93, 268
<i>Starkii</i> , Web. & Mohr.....	23, 259	<i>affinis</i> , Drumm.....	93
var. <i>major</i> , Drumm.....	33	<i>Alaskana</i> , Kindb.....	269
<i>stenodictyon</i> , Kindb.....	35	<i>ciliata</i> , Hedw.....	94
<i>strictum</i> , Schleich.....	24, 27, 259	<i>ciliata</i> , Drumm.....	94
<i>strictum</i> , Drumm.....	25	<i>commutata</i> , Nees. & Hornsch.....	93
<i>strumiferum</i> , Drumm.....	17	<i>cucullata</i> , C. M. & Kindb.....	96, 269
<i>subbasilare</i> , Drumm.....	37	<i>leiocarpa</i> , Kindb.....	95
<i>subpalustre</i> , C. M. & Kindb.....	33, 261	<i>leiomitra</i> , Kindb.....	94
<i>subpalustre</i> , C. M. & Kindb.....	30	<i>longipes</i> , Mitt.....	95
<i>subulatum</i> , Drumm.....	22	<i>Macounii</i> , Aust.....	94
<i>subulifolium</i> , Kindb.....	26	<i>procera</i> , Bruch.....	96
<i>sulcatum</i> , Kindb.....	26, 259	<i>rhabdocarpa</i> , Schwaegr.....	93
<i>tenuinerve</i> , Zett.....	25	<i>rhabdocarpa</i> , Schw. var. <i>leiomitra</i> , Kindb.....	94
<i>tenuinerve</i> , Zett.....	25	<i>Selwyni</i> , Aust.....	96
<i>undulatum</i> , Turn.....	34	<i>Spathulata</i> , Can. Musc.....	93
<i>undulatum</i> , Turn.....	33	<i>streptocarpa</i> , Hedw.....	96
<i>undulifolium</i> , C. M. & Kindb.....	32	<i>streptocarpa</i> , Drumm.....	96
<i>varium</i> , Drumm.....	21, 20	<i>subspathulata</i> , C. M. & Kindb.....	93
<i>virens</i> , Hedw.....	17	<i>vulgaris</i> , Hedw.....	93, 268
<i>viride</i> , Schimp.....	25	<i>Entodon</i> , C. Mueller.....	176
<i>viride</i> , Schimp.....	27	<i>acicularis</i> , C. M. & Kindb.....	176
<i>Didymodon</i> , Hedw.....	44, 262	<i>brevisetum</i> , (Hook. & Wils).....	178
<i>caespitosus</i> , Mitt.....	81	<i>cladorrhizans</i> , C. Muell.....	177
<i>Baden-Powellii</i> , Kindb.....	262	<i>compressum</i> , C. Muell.....	178
<i>Canadensis</i> , Kindb.....	44	<i>expallens</i> , C. M. & Kindb.....	177
<i>capillaceum</i> , Drumm.....	39	<i>Macounii</i> , C. M. & Kindb.....	177
<i>cylindricus</i> , Bruch & Schimp.....	45	<i>pallens</i> , C. M. & Kindb.....	177
<i>flexicaule</i> , Drumm.....	46	<i>seductrix</i> , C. Muell.....	178
<i>fragile</i> , Drumm.....	51	<i>Eubarbula</i> , C. Mueller.....	51
<i>glaucescens</i> , Drumm.....	46	<i>Eucladium</i> , Bryol. Europ.....	14, 256
<i>heteromallum</i> , Drumm.....	46	<i>verticillatum</i> , Bryol. Europ.....	14, 256
<i>inclinatum</i> , Drumm.....	40	<i>Eugrimmia</i>	65
<i>Lapponicus</i> , Mitt.....	80	<i>Ephemerum</i> , Hampe.....	11

PAGE.

48	minutissimum, Lindb.....	11
44	<i>scrratum</i> , Haume var. <i>angusti-</i>	
48	<i>folium</i> , Schimp.....	11
38	Eurhynchium, Schimp.....	205, 276
54	Boschii, (Schwaegr).....	206
262	crassinerve, Schimp. var. <i>lax-</i>	
44	<i>orete</i> , Kindb.....	207
44	Dawsoni, Kindb.....	206
45	diversifolium, Bruch &	
157	Schimp.....	205
157	hians, (Hedw).....	206
98	Oreganum, (Sulliv.).....	207
98	piliferum, Bruch & Schimp.....	206, 276
98	praelongum, Bruch & Schimp.....	206
98	semiasperum, C. M. & Kindb.....	207
262	Stokesii, Bruch & Schimp.....	207, 276
262	strigosum, Bruch & Schimp.....	205
262	substrigosum, Kindb.....	205
262	Sullivantii (Spruce).....	206
262	Vaucherii, (Schimp).....	205, 276
40	Fabroneae	166
234	Fabronia, Raddi.....	166
81	pusilla, Raddi.....	166
81	Fissidentae	35
81	Fissidens, Hedw.....	35, 261
268	adiantoides, Hedw.....	37, 261
93	adiantoides, Hedw.....	37
269	var. <i>brachyphyllum</i> ,	
94	Kindb.....	37
94	bryoides, Hedw.....	35
93	decipiens, P. e. Not.....	37
269	exiguus, Sulliv.....	36
94	grandifrons, Brid.....	38
95	incurvus, Schwaegr.....	36
94	<i>incurvus</i> , Can. Musc.....	36
96	limbatus, Sulliv.....	36
93	minutulus, Sulliv.....	36
94	osmundoides, Hedw.....	37, 261
96	pusillus, Wils.....	36
93	subbasilaris, Hedw.....	37
96	tamarindifolius, Don.....	36
96	Fontinales	157
93	Fontinalis, Dill.....	157, 273
268	antipyretica, Linn.....	157, 273
176	var. <i>gigantea</i> , Sulliv.....	158
176	biformis, Sulliv.....	158
178	capillacea, Drumm.....	160
177	Dalecarlica, Bruch & Schimp.....	158
178	disticha, Hook. & Wils.....	159
177	hypnoides Hartm.....	159
177	Kindbergii, Ren. & Card.....	158
177	Kindbergii, Can. Musc.....	158
178	<i>Lescurii</i> , Can. Musc.....	158
51	Neo-Mexicana, Sulliv. & Lesq.....	158
256	Novae-Angliae, Sulliv.....	159
256	squamosa, Linn.....	159
65	squamosa, Drumm.....	158
11	tenella, Ren. & Card.....	159

PAGE.

Funaria, Schreb.....	103
calcareae, Wahl.....	103
hygrometrica, Sibth.....	103
var. <i>calvescens</i> , Bruch &	
Schimp.....	104
Muhlenbergii, Drumm.....	103
Glyphomitrium, Brid.....	79
Canadense, Mitt.....	79
Grimmieae	61
Grimmia, Ehrh.....	62, 266
acicularis, Mitt.....	72
Agassizii, Lesq. & James.....	64
alpestris, Schleich.....	70, 266
anodon, Bruch & Schimp.....	65
alpicola, Swartz.....	63, 266
apocarpa, Hedw.....	63, 266
apocarpa, Drumm.....	62
var. <i>gracilis</i> , Lesq. &	
James.....	63
var. <i>rivularis</i> , Lesq. &	
James.....	63
var. <i>stricta</i> , Drumm.....	62
arcuatifolia, Kindb.....	69
atrata, Drumm.....	71
atrata, C. M. & Kindb.....	65
Californica, Can. Musc.....	67
calyptrata, Hook.....	71
<i>canescens</i> , Mitt.....	77
chloroblasta, Kindb.....	64
commutata, Heuben.....	71, 266
commutata, Can. Musc.....	70
conferta, Funck.....	62
contorta, Bruch & Schimp.....	67
contorta, Wahl.....	67
<i>coccinodontoides</i> , Kindb.....	64
crassinervis, C. Muell.....	64, 266
densa, Kindb.....	69
depilata, Kindb.....	69
Donniana, Smith.....	70
elatior, Bruch.....	68
elatior, Bryol Europ.....	70
elongata, Kaulf.....	71
funalis, Schimp.....	67
gracilis, Nees & Hornsch.....	63, 266
heterophylla, Kindb.....	64
Hookeri, Drumm.....	79
lanuginosa, Mitt.....	76
Mannii, C. Muell.....	62
maritima, Turn.....	64, 266
maritima, Can. Musc.....	64
microtricha, C. M. Kindb.....	70
mollis, Bryol Europ.....	71
montana, Bruch & Schimp.....	71
Muehlenbeckii, Schimp.....	68, 267
nivalis, Kindb.....	66
Olneyi, Sulliv.....	69
ovata, Web. & Mohr.....	70, 266
pacbyneurula, C. M. & Kindb.....	65

	PAGE.		PAGE.
<i>patens</i> , Mitt.	72	Homalothecium , Bruch &	
<i>Pennsylvanica</i> , Schwaegr.	71	<i>Schimp</i>	175, 274
<i>plagiopodia</i> , Hedw.	65	<i>corticola</i> , Kindb.	175, 274
var. <i>pilifera</i> , Lesq. &		<i>pseudo-sericeum</i> , Lesq. &	
James.	65	James.	175
<i>platyphylla</i> , Mitt.	64	<i>pseudo-sericeum</i> , Can. Musc.	188
<i>prolifera</i> , C. M. & Kindb.	67	<i>sericeoides</i> , C. M. & Kindb.	175
<i>pulvinata</i> , Smith.	66	<i>sericeum</i> , Bryol. Europ.	176
<i>revularis</i> , Nees & Hornsh.	63, 266	Hookerleae	166
<i>sarcocalyx</i> , Kindb.	66	Hylocomium , Schimp.	247
<i>Scouleria</i> , Lesq. & James.	61	<i>Alaskanum</i> , Kindb.	248
<i>spiralis</i> , Hook. & Tayl.	67	<i>brevirostre</i> , Schimp.	248
<i>streptophylla</i> , Laubm.	68	<i>calvescens</i> , Lindb.	249
<i>sulcata</i> , Sant.	70	<i>loreum</i> , Schimp.	250
<i>tenella</i> , C. Muell.	66	<i>pyrenaicum</i> , Lindb.	248
<i>torquata</i> , Grev.	68, 266	<i>robustum</i> , Kindb.	250
<i>tortifolia</i> , Kindb.	68	<i>splendens</i> , Schimp.	247
<i>trichophylla</i> , Grev.	69	var. <i>compactum</i> , Lesq. &	
<i>trichophylla</i>	69	James.	248
<i>unicolor</i> , Grev.	71	<i>squarrosus</i> , Schimp.	249
<i>vario</i> , Mitt.	75	var. <i>calvescens</i> , Lindb.	249
Gymnostomum , Hedw.	12, 256	<i>triquetrum</i> , Schimp.	249
<i>calcareum</i> , Nees & Hornsch.	12	<i>umbratum</i> , Schimp.	248
var. <i>brevifolium</i> , Schimp.	13	Hypnæe	180
<i>curvirostrum</i> , Hedw.	13, 256	Hypnum , Linn.	222
<i>Heimia</i> , vars. I, II, III,		<i>abietinum</i> , Linn.	186
Drumm.	43	var. <i>minor</i> , Drumm.	184
<i>Lapponicum</i> , Drumm.	80	<i>acuminatum</i> , Beauv.	191
<i>latifolium</i> , Drumm.	103	<i>acuticuspis</i> , Mitt.	204
<i>ovatum</i> , Drumm.	42	<i>acutum</i> , Mitt.	193
<i>phascoides</i> , Drumm.	12	<i>adnatum</i> , Hedw.	220
<i>platyphyllum</i> , Kindb.	12	<i>adnatum</i> , var. Can. Musc.	220
<i>pusillum</i> , Drumm.	41	<i>adnatum</i> , Drumm.	227
<i>rupestre</i> , Schwaegr.	13, 256	<i>oduncum</i> , Can. Musc.	226
var. <i>stelligerum</i> , Schimp.	13	var. <i>Kneiffii</i> , Schimp.	226
<i>subsessile</i> , Drumm.	42	<i>sericum</i> , Mitt.	188
<i>tenue</i> , Schrad.	14	<i>aggregatum</i> , Mitt.	204
<i>tortile</i> , Drumm.	12	<i>Alaskanum</i> , Lesq. & James.	248
<i>viridissimum</i> , Drumm.	80	<i>albicans</i> , Neck.	194
Harpidium , Sulliv.	226	<i>Alleghaniense</i> , C. Muell.	210
Hedwigia , Ehrh.	78	<i>alpestre</i> , Swartz.	243
<i>ciliata</i> , Ehrh.	78	<i>anænum</i> , Drumm.	239
var. <i>leucophæa</i> , Schimp.	78	<i>aplocladum</i> , Mitt.	204
var. <i>secunda</i> , Schimp.	78	<i>arcticum</i> , Sommerf.	242
var. <i>viridis</i> , Schimp.	78	<i>arcuatum</i> , Lindb.	238
<i>pilifera</i> , Mitt.	79	<i>arcuatiforme</i> , Kindb.	238
<i>subnuda</i> , Kindb.	78	<i>aspermum</i> , Mitt.	200
Heterocladium , Bruch & Schimp.	182	<i>attenuatum</i> , Drumm.	171
<i>aberrans</i> , Ren. & Card.	183	<i>badium</i> , Hartms.	245
<i>dimorphism</i> , Brid.	182, 275	<i>badium</i> , Hartms.	245
<i>frullaniopsis</i> , C. M. & Kindb.	183	<i>Baumbergeri</i> , Schimp.	239
<i>heteropterum</i> , Bruch.	182	<i>Bigelovii</i> , Sulliv.	211
<i>homacopterum</i> , C. M. & Kindb.	183	<i>Blandowii</i> , Web. & Mohr.	186
<i>procurrens</i> , Lesq. & James.	183	<i>Boschii</i> , Schimp.	206
<i>Vancouveriense</i> , Kindb.	183	<i>brevifolium</i> , Lindb.	227
Heterophyllum , C. Muell.	239	<i>Brewerianum</i> , Lesq.	204
Homalia , Brid.	163	<i>byssirameum</i> , C. M. & Kindb.	223
<i>Macounii</i> , C. M. & Kindb.	163	<i>brevirostre</i> , Ehrh.	248
<i>obtusata</i> , Mitt.	163		
<i>trichomanoides</i> , Lesq. & James.	163		

PAGE.

<i>crispitum</i> , Brid	235
<i>callichroum</i> , Wils	202
<i>campestre</i> , Brid	200
<i>Canadense</i> , Kindb	236
<i>catenulatum</i> , Drumm	182
<i>chloropterum</i> , C. M. & Kindb	231
<i>chrysophyllum</i> , Brid	223
<i>circinale</i> , Hook	235
<i>circinale</i> , Can. Musc	235
<i>circulifolium</i> , C. M. & Kindb	242
<i>commutatum</i> , Hedw	232
<i>commutatum</i> var. <i>falcatum</i> Brid	232
<i>compactum</i> , C. Muell	221
<i>compactum</i> , Can. Musc	221
<i>complexum</i> , Lesq. & James	237
<i>collinum</i> , Schleich	186
<i>Columbie</i> , Kindb	224
<i>Columbieo-palustre</i> , C. M. & Kindb	241
<i>conferoides</i> , Drumm	217
<i>conferoides</i> , Brid	218
<i>conflatum</i> , C. M. & Kindb	230
<i>cordifolium</i> , Hedw	245
<i>cordifolium</i> , Drumm	246
<i>Cossoni</i> , Schimp	227
<i>crispifolium</i> , Hook	186
<i>crista-castrensis</i> , Linn	233
<i>cupressiforme</i> , Linn	237
<i>cupressiforme</i> , Drumm	235
<i>cupressiforme</i> var. <i>angustioribus</i> , Drumm	234
<i>curvifolium</i> , Hedw	238
<i>cuspidatum</i> , Linn	246
<i>cylindricarpum</i> , C. Muell	208
<i>decipiens</i> , (DeNot.)	232
<i>decursivulum</i> , C. M. & Kindb	224
<i>delicatulum</i> , Linn	185
<i>demissum</i> , Wils	208
<i>demissum</i> , Can. Musc	208
<i>denticulatum</i> , Bruch & Schimp	214
var. <i>Donianum</i> , Drumm	212
<i>deplanatum</i> , Schimp	209
<i>dilatatum</i> , Wils	241
<i>diversifolium</i> , Schimp	205
<i>Donnellii</i> , Aust	195
<i>degans</i> , Hook	213
<i>erectum</i> , Drumm	191
<i>eugyrium</i> , Schimp	243
<i>exannulatum</i> , Guembel	228
<i>falcatum</i> , Brid	232
var. <i>microphyllum</i> , Kindb	232
<i>fastigiatum</i> , Brid	235, 277
<i>fertile</i> , Sendt	234
<i>filicinum</i> , Linn	230
var. <i>aciculium</i> , C. M. & Kindb	231
<i>flaccum</i> , C. M. & Kindb	240
<i>Flemmingii</i> , Lesq. & James	250
<i>fluitans</i> , Linn	228

PAGE.

<i>fluitans</i> , Can. Musc	230
<i>fluviale</i> , Swartz	220
<i>geminum</i> , Lesq. & James	212
<i>giganteum</i> , Schimp	246
<i>Goulardi</i> , Schimp	242
<i>Goulardi</i> , Can. Musc	243
<i>gracile</i> , Bruch & Schimp	184
<i>Haldanianum</i> , Grev	239
<i>Halleri</i> , Drumm	224
<i>hamatidens</i> , Kindb	189
<i>hamulosum</i> , Bruch & Schimp	235, 277
<i>Heufleri</i> , Jur	237
<i>hians</i> , Hedw	206, 207
<i>hispidulum</i> , Brid	222, 277
<i>Jamesii</i> , Lesq. & James	209
<i>ilicetrum</i> , Schwaegr	203
<i>ilicetrum</i> , Drumm	206
<i>imponens</i> , Hedw	236
<i>intermedium</i> , Lindb	227
<i>irriguum</i> , Lesq. & James	220
<i>Kneiffii</i> , (Bruch & Schimp)	226
var. <i>gracilescens</i> , Bruch & Schimp	226
var. <i>laxum</i> , Kindb	226
var. <i>platyphyllum</i> , Kindb	226
var. <i>rectifolium</i> , Kindb	226
<i>lactum</i> , Brid	190
<i>laxifolium</i> , Schwaegr	187
<i>latebricola</i> , Bruch & Schimp	211
<i>latebricola</i> , Can. Musc	211, 277
<i>lentum</i> , Mitt	203
<i>Lindbergii</i> , Mitt	238
<i>longinerve</i> , Kindb	230
<i>loreum</i> , Linn	250
<i>lutescens</i> , Drumm	193
<i>lutescens</i> , Hedw	188
<i>lycopodiodes</i> , Schwaegr	227
<i>Macounii</i> , Kindb	224
<i>medium</i> , Drumm	168
<i>microcarpum</i> , C. Muell	209
<i>minutissimum</i> , Sulliv	216
<i>minutulum</i> , Hedw	184
<i>molle</i> , Lesq. & James	241
<i>molluscum</i> , Hedw	233
<i>moniliforme</i> , Drumm	167
<i>montanum</i> , Wils	243
<i>Moseri</i> , Kindb	229
<i>Muehlenbeckii</i> , Spruce	213
<i>myosuroides</i> , Linn	203
<i>neckeroides</i> , Hook	210
<i>nemorosum</i> , Koch	240
<i>Nevadense</i> , Lesq	188
<i>nitens</i> , Schreb	189
<i>Norvegicum</i> , Bruch & Schimp	242
<i>Novae-Angliae</i> , Sulliv. & Lesq.	231
<i>Nova-Angliae</i> , Can. Musc	231
<i>Nuttallii</i> , Wils	188
<i>Oakenii</i> , Sulliv	248
<i>obtusifolium</i> , Hook	202

	PAGE.		PAGE.
<i>ochraceum</i> , Turn.....	244	<i>Schreberi</i> , Willd.....	247
<i>oedipodium</i> , Mitt.....	197	<i>scitum</i> , Beauv.....	184
<i>Oreganum</i> , Sulliv.....	207	<i>scorpioides</i> , Schimp.....	245
<i>orthocladon</i> , Beauv.....	219	<i>scorpioides</i> , Linn.....	245
<i>orthothecioides</i> , Lindb.....	229	<i>Sendtneri</i> , Can. Musc.....	230
<i>pallescens</i> , Schimp.....	234	<i>Sendtneri</i> , Schimp.....	226
<i>palustre</i> , Huds.....	241	<i>Sequoiæti</i> , C. Muell.....	235
<i>Passaicense</i> , Lesq. & James....	211	<i>sericeum</i> , Drumm.....	176
<i>piliferum</i> , Schrad.....	206	<i>serpens</i> , Linn.....	218
<i>pinnatifidum</i> , Can. Musc.....	188	var. <i>compactum</i> , Drumm..	221
<i>plicatile</i> , Lesq. & James.....	237	<i>serulatum</i> , Hedw.....	210
<i>plumosum</i> , Swartz.....	202	<i>Silesianum</i> , Drumm.....	215
<i>polare</i> , Lindb.....	242	<i>Sommerfeltii</i> , Myrin.....	223
<i>polyanthos</i> , Drumm.....	173	<i>Sommerfeltii</i> , Can. Musc.....	224
<i>polygamum</i> , Wils.....	225	<i>spiculiferum</i> , Mitt.....	203, 204
<i>populeum</i> , Hedw.....	201	<i>splendens</i> , Hedw.....	247
<i>porphyrrhizum</i> , Can. Musc.....	219	<i>Sprucei</i> , Bruch & Schimp....	217
<i>prælongum</i> , Lesq. & James....	207	<i>squarrosum</i> , Linn.....	249
<i>pratense</i> , Hook.....	239	<i>Starkii</i> , Brid.....	196
<i>proliferum</i> , Drumm.....	185	<i>stellatum</i> , Schreb.....	225
var. <i>compactum</i> , Drumm..	185	var. <i>protensum</i> , Bruch &	
<i>pseudo-arcticum</i> , Kindb.....	242	Schimp.....	225
<i>pseudo-drepanium</i> , C. M. &		var. <i>subdecursivum</i> ,	
Kindb.....	240	Kindb.....	225
<i>pseudo-fastigiatum</i> , C. M. &		<i>stellatum</i> , Drumm.....	225
Kindb.....	235	var. <i>chrysophyllum</i> ,	
<i>pseudo-montanum</i> , Kindb....	243	Drumm.....	223
<i>pseudo-pratense</i> , Kindb.....	239	var. <i>polymorphum</i> , Drum..	223
<i>pulchellum</i> , Dicks.....	212	<i>Stokesii</i> , Turn.....	207
<i>pulchellum</i> , Drumm.....	212	<i>stoloniferum</i> , Hook.....	203
<i>puchellum</i> , Can. Musc.....	212	<i>stramineum</i> , Dicks.....	244
<i>pulchrum</i> , Drumm.....	191, 239	<i>stramineum</i> , Dicks.....	244
<i>purum</i> , Linn.....	246	<i>strigosum</i> , Hoffm.....	205
<i>radicale</i> , Beauv.....	217	<i>subflaccum</i> , C. M. & Kindb..	240
<i>radicale</i> , Drumm.....	219	<i>subimponens</i> , Lesq.....	236
<i>recognitum</i> , Hedw.....	185	var. <i>cristula</i> , Kindb.....	237
<i>recurvans</i> , Schwagr.....	208	<i>subtrigosum</i> , Can. Musc.....	205
<i>reflexum</i> , Starke.....	197	<i>subtile</i> , Hoffm.....	217
<i>Renaudii</i> , Kindb.....	238	<i>Sullivantæ</i> , Schimp.....	215
<i>reptile</i> , Michx.....	234	<i>Sullivantii</i> , Spruce.....	206
<i>revolutum</i> , Lindb.....	237	<i>sylvaticum</i> , Huds.....	215
<i>revolvens</i> , Swartz.....	227	<i>tenax</i> , Drumm.....	181
<i>revolvens</i> , var. <i>intermedium</i> ,		<i>torrentis</i> , C. M. & Kindb....	243
Lesq. & James.....	227	<i>trichomanoides</i> , Drumm.....	163
<i>Richardsoni</i> , Mitt.....	246	<i>trichophorum</i> , Spruce.....	212
<i>riparium</i> , Linn.....	221	<i>trifarum</i> , Web. & Mohr.....	244
<i>riolare</i> , Bruch.....	200	<i>trifarum</i> , Web. & Mohr.....	244, 246
var. <i>Novæ-Brunsviciæ</i>		<i>triquetrum</i> , Linn.....	249
Kindb.....	201	<i>turfaceum</i> , Lindb.....	213
<i>robustum</i> , Hook.....	250	<i>turgescens</i> , Schimp.....	245
<i>rostratum</i> , Drumm.....	170	<i>turgescens</i> , Schimp.....	245
<i>ruforescens</i> , Drumm.....	179	<i>umbratum</i> , Can. Musc.....	248
<i>rugosum</i> , Linn.....	232	<i>umbratum</i> , Ehrh.....	248
<i>rugulosum</i> , Drumm.....	232	<i>uncinatum</i> , Hedw.....	228
<i>ruscifforme</i> , Weis.....	210	var. <i>micropterum</i> , Kindb..	229
<i>Rutabulum</i> , Linn.....	197	var. <i>plumosum</i> , Schimp..	229
<i>Rutabulum</i> , Can. Musc.....	195	var. <i>subestriatum</i> , Kindb..	229
<i>salebrosum</i> , Drumm.....	190, 194	<i>uncinatum</i> var. <i>plumosum</i> , Can.	
<i>salebrosum</i> , Hoffm.....	192	Musc.....	221
<i>sarmentosum</i> , Wahl.....	246		

AGE.		PAGE.		PAGE.
247	<i>undulatum</i> , Linn.....	216	<i>Leucodon</i> , Schwaegr.....	164
184	<i>unicostatum</i> , C. M. & Kindb..	224	<i>brachypus</i> , Brid.....	164
245	<i>vacillans</i> , Lesq. & James.....	222	<i>sciuroides</i> , Schwaegr.....	164
245	<i>Vaucherii</i> , Schimp.....	205	Leucodontae	164
230	<i>velutinum</i> , Linn.....	196	<i>Limnobia</i> , Bruch & Schimp....	241
226	<i>vernicosum</i> , Lindb.....	227	<i>Mucounia sciuroides</i> , Kindb.....	180
235	<i>Waghornii</i> , Kindb.....	234	<i>Meesia</i> , Hedw.....	108, 270
176	<i>Whippleanum</i> , Sulliv.....	186	<i>Albertinii</i> , Bruch & Schimp..	109
218	<i>Wilsoni</i> , (Schimp).....	227	<i>longiseta</i> , Hedw.....	109
221	<i>Zuratzkae</i> , Schimp.....	218	<i>tristicha</i> , Bruch & Schimp....	109
210	<i>Zuratzkae</i> , Can. Musc.....	218	<i>uliginosa</i> , Hedw.....	108, 270
215	<i>Isoetecium</i> , Brid.....	203, 275	<i>var. alpina</i> , Bruch &	
223	<i>acuticuspis</i> , Lesq. & James..	204	Schimp.....	109
224	<i>aggregatum</i> , Lesq. & James..	204	<i>var. minor</i> , Bruch &	
247	<i>apocladum</i> , Lesq. & James..	204	Schimp.....	109
217	<i>Brewerianum</i> , Lesq. & James.	204	Meesieae	108
249	<i>Cardoti</i> , Kindb.....	203, 275	<i>Merceya</i>	97
196	<i>Dawsoni</i> , Kindb.....	209	<i>latifolia</i> , Kindb.....	97
225	<i>lentum</i> , Lesq. & James.....	203	<i>Meteorium</i> , Brid.....	164
225	<i>myosuroides</i> , Brid.....	203, 275	<i>nigrescens</i> , Mitt.....	164
225	<i>myurellum</i> , Kindb.....	204	<i>Mielichhoferia</i> , Hornsch.....	110
225	<i>spiculiferum</i> , Lesq. & James.	204	<i>cuspidifera</i> , Kindb.....	110
225	<i>stoloniferum</i> , Brid.....	203	<i>nitida</i> , Nees & Hornsch. <i>var.</i>	
225	<i>Leptobryum</i> , Schimp.....	110, 270	<i>macrocarpa</i> , C. Muell. .	110
225	<i>pyriforme</i> , Schimp.....	110, 270	<i>Mnium</i> , Linn.....	136, 272
225	<i>Leptodon</i> , Mohr.....	161	<i>affine</i> , Bland.....	138
223	<i>nitidus</i> , Lindb.....	161	<i>Blyttii</i> , Bruch & Schimp....	142
223	<i>trichomitrium</i> , Mohr.....	161	<i>cinclidioides</i> , Heuben.....	142
207	<i>Leptodontium</i> , Hampe.....	45	<i>cuspidatum</i> , Hedw.....	136
203	<i>Canadense</i> , Kindb.....	45	<i>var. tenellum</i> , Kindb....	136
244	<i>Leptobarbula</i> , Schimp.....	49	<i>decurrens</i> , C. M. & Kindb....	140
244	<i>berica</i> , Schimp.....	49	<i>Drummondii</i> , Bruch & Schimp	137
205	<i>Leptotrichum</i> , Hampe.....	45, 262	<i>hornum</i> , Linn.....	139
240	<i>brevifolium</i> , Kindb.....	46	<i>hymenophylloides</i> , Heuben..	143
236	<i>flexicaule</i> , Hampe.....	46	<i>hymenophyllum</i> , Bryol.	
237	<i>var. densum</i> , Schimp....	46	<i>Europ</i>	143
205	<i>var. densum</i>	40	<i>inclinatum</i> , Lindb.....	141
217	<i>glaucescens</i> , Hampe.....	46, 262	<i>insigne</i> , Mitt.....	138
215	<i>homomallum</i> , Hampe.....	46	<i>var. intermedium</i> , Kindb	139
206	<i>pallidum</i> , Hampe.....	46	<i>lycopodioides</i> , Lesq. & James..	140
215	<i>tenuis</i> , C. Muell.....	49	<i>macroclaire</i> , C. M. & Kindb.	137
181	<i>tortile</i> , C. Muell.....	45	<i>medium</i> , Bruch & Schimp....	138
243	<i>vaginans</i> , Lesq. & James....	45	<i>medium * robustum</i> , Kindb....	139
163	<i>Leskea</i> , Hedw.....	168, 274	<i>Menziesii</i> , C. Muell.....	143
212	<i>cryptophylla</i> , Kindb.....	169	<i>Nerii</i> , C. Muell.....	137
244	<i>denticulata</i> , Sulliv.....	170	<i>Niagarae</i> , Kindb.....	141
246	<i>nervosa</i> , Myrin.....	169, 274	<i>orthorrhynchum</i> , Bruch &	
249	<i>var. flagellifera</i> , Kindb..	172	Schimp.....	140, 272
213	<i>nigrescens</i> , Kindb.....	172	<i>orthorrhynchum</i> , Can. Musc	140, 142
245	<i>polycarpa</i> , Ehrh.....	168	<i>pseudo-lycopodioides</i> , C. M. &	
245	<i>pulvinata</i> , Wahl.....	170	Kindb.....	140
245	<i>subobtusifolia</i> , C. M. & Kindb.	169	<i>punctatum</i> , Hedw.....	142
248	<i>Wolfei</i> , Aust.....	170	<i>rostratum</i> , Schwaegr.....	137, 272
248	Leskeae	166	<i>rugicum</i> , Laur.....	138
228	<i>Lescuraea</i> , Schimp.....	170	<i>serratum</i> , Brid.....	139
229	<i>imperfecta</i> , C. M. & Kindb..	170	<i>var. Macounii</i> , Kindb....	139
229	Leucobryae	38	<i>spinulosum</i> , Bruch & Schimp.	141
229	<i>Leucobryum</i> , Hampe.....	38	<i>stellare</i> , Hedw.....	142
221	<i>vulgare</i> , Hampe.....	38	<i>subglobosum</i> , Bruch & Schimp	143

	PAGE.		PAGE.
umbratile, Mitt.....	141	consimile, Can. Musc.....	91
venustum, Mitt.....	137	crispum, Drumm.....	84
Monocranum, C. Muell.....	35	cupulatum, Hoffm.....	87
diceranoides, C. Muell.....	35	var. minus, Sulliv.....	87
stenodictyon, Kindb.....	35	cupulatum, Drumm.....	87
Myurella, Bruch & Schimp.....	167	cylindrocarpum, Lesq.....	91, 268
apiculata, Bruch & Schimp.....	168	elegans, Schwaegr.....	89
Careyana, Sulliv.....	168	fallax, Schimp.....	90
gracilis, Lindb.....	168	fallax, Schimp.....	90
julacea, Bruch & Schimp.....	167	Greenlandicum, Berggr.....	88
Neckera, Hedw.....	161	Hallii, Sulliv. & Lesq.....	268
complanata, Heuben.....	163	Hutchinsiae, Drumm.....	83
cladorrhizans, Drumm.....	178, 176	Jamesianum, Sulliv.....	92
Douglasii, Hook.....	162	Killiasii, C. Muell.....	89
var. Macounii, Kindb.....	163	laevigatum, Zett.....	87
Menziesii, Drumm.....	161	leiocarpum, Bruch & Schimp.....	91
var. amblyclada, Kindb.....	162	leiocarpum, Can. Musc.....	89
oligocarpa, Bruch & Schimp.....	162	lonchothecium, C. M. & Kindb.....	90
oligocarpa, Can. Musc.....	162	lonchothecium, Can. Musc.....	90
pennata, Hedw.....	162	Ludwigii, Drumm.....	81
peterantha, C. M. & Kindb.....	162	Lyellii, Hook. & Tayl.....	92
sericea, Drumm.....	172	var. papillosum, Lesq. & James.....	92
Neckereae	161	var. Pringlei, C. Muell.....	92
Cedipodium, Schwaegr.....	102	nudum, Dicks.....	268
Griffithianum, Schwaegr.....	102	var. Rudolpianum, Schw.....	87
Oligotrichum, DC.....	149	obtusifolium, Schrad.....	92
aligerum, Mitt.....	149	obtusifolium, Drumm.....	90
hercynicum, DC.....	149	Ohioense, Sulliv. & Lesq.....	89
var. latifolium, C. M. & Kindb.....	149	pallens, Bruch.....	91
Lyallii, Lindb.....	149	psilocarpum, James.....	89
Oreoweisia, Schimp.....	15	psilocarpum, Can. Musc.....	89
serrulata, Schimp.....	15	psilothecium, C. M. & Kindb.....	91
var. tenuior, Kindb.....	15	pulchellum, Brunton.....	91
Orthothecium, Bruch & Schimp.....	179	Roellii, Vent.....	90
chryseum, Bruch & Schimp.....	179	rupestre, Schleich.....	88
chryseum.....	33	rupicola, Drumm.....	88
intricatum, Hartm.....	179	Schimperi, Hamm.....	90
rubellum, Kindb.....	179	sordidum, Sulliv. & Lesq.....	89
rufescens, Bruch & Schimp.....	179	speciosum, Nees.....	89
Orthotricheae	79	strangulatum, Beauv.....	90
Orthotrichum, Hedw.....	86, 268	striatum, Drumm.....	91
affine, Schrad.....	88	Sturmii, Hoppe & Hornsch.....	87
affine, Drumm.....	88	tenellum, Bruch.....	90
alpestre, Hornsch.....	88	Texanum, Sulliv.....	87
anomalum, Hedw.....	86, 268	var. globosum, Lesq.....	88
var. Americanum, Vent.....	86	Texanum, Can. Musc.....	88
anomatum, Drumm.....	86	Venturi, Can. Musc.....	87
Barthii, Sendtn.....	88	Watsoni, Can. Musc.....	88
Blyttii, Schimp.....	87	Paludella, Ehrh.....	110
brachytrichum, Schimp.....	90, 268	squarrosa, Brid.....	110
Braunii, Bruch & Schimp.....	89	Pharomitrium, Schimp.....	42
Broutellii, Hampe.....	88	subsessile, Schimp.....	42
Canadense, Bruch & Schimp.....	92	Phasceae	11
canum, Mitt.....	92	Phascum, Linn.....	11
Columbicum, Mitt.....	91	crispum, Hedw.....	12
connectens, Kindb.....	85	cuspidatum, Drumm.....	11
consimile, Mitt.....	90	var. piliferum, Bruch & Schimp.....	11

91	<i>muticum</i> , Drumm.....	11
84	<i>piliferum</i> , Schreb.....	11
87	<i>serratum</i> , Drumm.....	11
87	<i>subsertum</i> , Hook.....	12
1, 268	<i>Philonotis</i> , Brid.....	106, 270
89	<i>fontana</i> , Brid.....	106, 270
90	var. <i>brachyphylla</i> , Kindb.....	107
88	var. <i>Columbia</i> , Kindb.....	107
268	var. <i>microblasta</i> , C. M. & Kindb.....	107
83	var. <i>serrata</i> , Kindb.....	107
92	<i>glabrinuscula</i> , Kindb.....	107
89	<i>leiophylla</i> , Kindb.....	104
87	<i>Macounii</i> , Lesq. & James.....	106
91	<i>varchica</i> , Brid.....	106
89	Physcomitriæ	102
90	<i>Physcomitrium</i> , Brid.....	102, 269
90	<i>Hookeri</i> , Hampe.....	103
81	<i>Hookeri</i> , Can. Musc.....	102
92	<i>immersum</i> , Sulliv.....	102
92	<i>megalocarpum</i> , Kindb.....	102
268	<i>pyriforme</i> , Brid.....	102
87	<i>strangulatum</i> , Kindb.....	103
92	<i>turbinatum</i> , C. Muell.....	103
90	<i>platyphyllum</i> , Kindb.....	269
89	<i>Plagiothecium</i> , Schimp.....	211
91	aciculari-pungens, C. M. & Kindb.....	216
89	<i>Americanum</i> , Kindb.....	211
89	<i>attenuatirameum</i> , Kindb.....	277
91	<i>auriculatum</i> , Kindb.....	215
91	<i>bifariellum</i> , Kindb.....	211
90	<i>brevipungens</i> , Kindb.....	215
88	<i>denticulatum</i> , Bruch & Schimp.....	214
88	var. <i>latum</i> , Lesq. & James.....	214
90	var. <i>squarrosus</i> , Kindb.....	214
89	<i>dicursivifolium</i> , Kindb.....	277
90	<i>elegans</i> , Schimp.....	213
91	<i>geminum</i> , Lesq. & James.....	212
87	<i>latetricola</i> , Bruch & Schimp.....	211
90	<i>membranosum</i> , Kindb.....	215
87	<i>Muehlenbeckii</i> , Bruch & Schimp.....	213
88	<i>Passaicense</i> , Aust.....	211
87	<i>pulchellum</i> , Bruch & Schimp.....	212
88	var. <i>nitidulum</i> , Lesq. & James.....	212
110	<i>pseudo-latebricola</i> , Hindb.....	211
110	<i>Silesiacum</i> , Schimp.....	213
42	<i>Sullivantiae</i> , Schimp.....	215
42	<i>sylvaticum</i> , Bruch & Schimp.....	215
11	<i>trichophorum</i> , Spruce.....	212
11	<i>turfacum</i> , Lindb.....	213
12	<i>undulatum</i> , Bruch & Schimp.....	216
11	<i>Platygyrium</i> , Bruch & Schimp.....	172
&	<i>orthocladus</i> , Kindb.....	172
11	<i>repens</i> , Bruch & Schimp.....	172

<i>repens</i> var. <i>orthocladon</i> , Can. Musc.....	172
<i>rupestre</i> , Kindb.....	187
Pleurocarpi	157
<i>Pogonatum</i> , Beauv.....	149, 273
alpinum, Roehl.....	151
var. <i>brevifolium</i> , Brid.....	152
var. <i>microdontium</i> , Kindb.....	152
var. <i>septentrionale</i> , Brid.....	152
<i>atrovirens</i> , Mitt.....	151, 273
<i>brevicaule</i> , Beauv.....	149
<i>capillare</i> , Brid.....	150
<i>capillare</i> , Can. Musc.....	149
<i>contortum</i> , Lesq.....	150
<i>contortum</i> , Can. Musc.....	150, 273
<i>dentatum</i> , Brid.....	150, 273
<i>erythrodonium</i> , Kindb.....	150
<i>Macounii</i> , Kindb.....	152
<i>polare</i> , C. Muell.....	153
<i>urnigerum</i> , Beauv.....	151
<i>urnigerum</i> , Drumm.....	150
<i>urnigerum</i> , Can. Musc.....	150
Polytrichæ	147
<i>Polytrichum</i> , Linn.....	153, 273
alpestre, Drumm.....	155
alpinum, Drumm.....	151
var. <i>arcticum</i> , C. Muell.....	273
<i>ambiguum</i> , Michx.....	273
<i>angustatum</i> , Drumm.....	147
<i>attenuatum</i> , Menz.....	273
<i>boreale</i> , Kindb.....	155
<i>commune</i> , Can. Musc.....	156
<i>commune</i> , Lindb.....	156
var. <i>Canadense</i> , Kindb.....	156
var. <i>formosum</i> , Drumm.....	155
var. <i>perigoniale</i> , Bruch & Schimp.....	156, 273
<i>conorhynchum</i> , Kindb.....	154
<i>formosum</i> , Hedw.....	153, 273
<i>gracile</i> , Menz.....	153
<i>grandifolium</i> , Lindb.....	152
<i>hyperboreum</i> , R. Br.....	154
<i>juniperinum</i> , Willd.....	155
var. <i>Waghornei</i> , Kindb.....	155
<i>Ohioense</i> , Ren. & Card.....	153
<i>pallidisetum</i> , Drumm.....	156
<i>pallidisetum</i> var. <i>Drumm</i>	155
<i>piliferum</i> , Schreb.....	154
var. <i>Hoppei</i> , Rabenh.....	154
<i>septentrionale</i> , Drumm.....	152
<i>sexangulare</i> , Floerke.....	153
<i>strictum</i> , Banks.....	155
<i>sylvaticum</i> , Menz.....	273
<i>undulatum</i> , Drumm.....	148
<i>urnigerum</i> , Drumm.....	150
<i>Pottia</i> , Ehrh.....	42, 262
<i>cavifolia</i> , Ehrh.....	43
<i>Heimii</i> , Fuern.....	43, 262

	PAGE.		PAGE.
<i>Heimii</i> , Fuern	43	var. <i>ericoides</i> , Bruch & Schimp	77
<i>heimooides</i> , Kindb	43	var. <i>lutescens</i> , Lesq. & James	77
<i>intermedia</i> , Fuern	43	var. <i>muticum</i> , Kindb	77
<i>latifolia</i> , C. Muell	43	<i>fasciculare</i> , Brid	75, 267
var. <i>pilifera</i> , C. Muell	43	<i>heterostichum</i> , Brid	74, 267
<i>littoralis</i> , Mitt	43	var. <i>obtusum</i> , Kindb	75
<i>riparia</i> , Aust	43	<i>lanuginosum</i> , Brid	76, 268
<i>truncata</i> , Fuern	42	<i>Macounii</i> , Kindb	73
<i>truncata</i> , Can. Musc	43	<i>microcarpum</i> , Brid	76, 267
Pottlesæ	42	var. <i>Palmeri</i> , Kindb	267
<i>Pseudoleskea</i> , Bruch & Schimp	180, 274	<i>micropus</i> , Kindb	77
<i>atrovirens</i> , Dick	180, 274	<i>Nevii</i> , C. Muell	72, 267
var. <i>atracha</i> , Kindb	180	<i>obscurum</i> , Can. Musc	73
<i>catenulata</i> , Can. Musc	182	<i>obtusum</i> , Lindb	74
<i>falcicuspis</i> , C. M. & Kindb	182	<i>Oreganum</i> , Ren. & Card	75
<i>malacoclada</i> , C. M. & Kindb	182	<i>Oreganum</i>	73
<i>oligoclada</i> , Kindb	180	<i>patens</i> , Heuben	72
<i>radicosa</i> , Mitt	181	<i>protensum</i> , Braun	72
var. <i>gracilis</i> , Lesq. & James	181	<i>robustifolium</i> , Kindb	73
<i>rigescens</i> , Lindb	181	<i>speciosum</i> , C. Muell	76
<i>sciuroides</i> , Kindb	180	<i>Sudeticum</i> , Bruch & Schimp	74
var. <i>denudata</i> , Kindb	181	<i>Sudeticum</i> , Can. Musc	74
<i>stenophylla</i> , Ren. & Cardt	181	<i>varium</i> , Lesq. & James	75, 73
<i>Psilopium</i> , Brid	149, 273	<i>varium</i> , Can. Musc	75
<i>arcticum</i> , Brid	149, 273	Raphidostegium , Lesq. & James	208, 276
<i>Pterigynandrum</i> , Hedw	164, 274	<i>cylindricarpum</i> , Lesq. & James	208
<i>filiforme</i> , Hedw	164, 274	<i>demissum</i> , Lesq. & James	208
<i>papillosulum</i> , C. M. & Kindb	165	<i>Jamesii</i> , Lesq. & James	209, 276
<i>Pterogonium</i> , Swartz	165	<i>microcarpum</i> , Lesq. & James	209
<i>brachypterum</i> , Mitt	165	<i>recurvans</i> , Lesq. & James	208
<i>filiforme</i> , Drumm	164	<i>Röllii</i> , Ren. & Card	209
<i>hartellum</i> , Drumm	167	<i>subadnatum</i> , C. M. & Kindb	209
<i>intricatum</i> , Drumm	172	<i>subdemissum</i> , Kindb	208
<i>trichomitrium</i> , Drumm	161	Rhabdoweisia , Bruch & Schimp	16
<i>Pterygophyllum</i> , Brid	166	<i>denticulata</i> , Bruch & Schimp	16
<i>lucens</i> , Brid	166	<i>fugax</i> , Bruch & Schimp	16
<i>Ptychomitrium</i> , Bruch & Schimp	79	Rhynchostegium , Schimp	209, 276
<i>Gardneri</i> , Lesq	79	<i>aneuron</i> , Kindb	215
<i>incurvum</i> , Sulliv	79	<i>deplanatum</i> , Schimp	209, 276
<i>Pylaisia</i> , Bruch & Schimp	173, 274	<i>rusciforme</i> , Schimp	210
<i>filari-acuminata</i> , C. M. & Kindb	174	<i>serrulatum</i> , Lesq. & James	210, 276
<i>heteromalla</i> , Bruch & Schimp	173	Rhytidium , Sulliv	232
<i>intricata</i> , Bruch & Schimp	175	Schistidium	62
<i>intricata</i> , Can. Musc	174	Schistostega , Mohr	98
<i>Ontariensis</i> , C. M. & Kindb	174	<i>osmundacea</i> , Web. & Mohr	98
<i>polyantha</i> , Bruch & Schimp	173, 274	Schistostegæ	98
<i>pseudo-platygyrium</i> , Kindb	173	Scleropodium , Schimp	202
<i>Selwynii</i> , Kindb	174	<i>caespitosum</i> , Bruch & Schimp	202
<i>velutina</i> , Bruch & Schimp	175	<i>illecebrum</i> , Bryol Europ	203
Racomitrium , Brid	72, 267	<i>Krausei</i> , C. Muell	203
<i>aciculare</i> , Brid	72, 267	<i>obtusifolium</i> , Kindb	202
<i>affine</i> , Lindb	74, 267	Scouleria , Hook	61
<i>alternatum</i> , C. M. & Kindb	73	<i>aquatica</i> , Hook	61
<i>brevipes</i> , Kindb	77	var. <i>nigrescens</i> , Kindb	61
<i>canescens</i> , Brid	77, 268		

PAGE.

77

77

77

267

267

75

268

73

267

267

77

267

73

74

75

73

72

72

73

76

74

74

5, 73

75

&

8, 276

&

208

208

90, 276

209

208

209

208

16

16

16

9, 276

215

9, 276

210

&

0, 276

232

62

98

98

98

202

202

203

203

202

61

61

61

PAGE.

var. <i>viridescens</i> , Kindb....	61
Muelleri, Kindb.....	62
Nevii, C. Muell.....	61
Seligeria, Bruch & Schimp.....	41
calcareosa, Bruch & Schimp....	41
campylopoda, Kindb.....	41
Donii, C. Muell.....	41
pusilla, Bruch & Schimp.....	41
recurvata, Bruch & Schimp....	41
var. arcuata, Lesq. & James.....	41
Seligeriaceæ	41
Senophyllum, C. Muell.....	52
Sphaerangium, Schimp.....	11
triquetrum, Schimp.....	11
Sphagnaceæ	1
Sphagnum, Linn.....	1
acutifolium, Russ & Warnst. 3,	252
var. <i>fuscum</i> , Lesq. & James.....	2
var. <i>fuscum</i> , Can. Musc....	3
var. <i>pallidum</i> , Warnst. 4,	252
var. <i>purpurascens</i> , Warnst.....	4, 252
var. <i>rubrum</i> , Warnst....	252
var. <i>versicolor</i> , Warnst. 4,	252
compactum, DC.....	7, 254
var. <i>imbricatum</i> , Warnst.	255
var. <i>papillosum</i> , Warnst.	7
var. <i>squarrosum</i> , Russ. 7,	255
var. <i>subsquarrosum</i> Warnst.....	7
cuspidatum, Russ. & Warnst	
var. <i>falcatum</i> , Russ.....	5
var. <i>Miquelonense</i> , Ren. & Card.....	5
var. <i>plumosum</i> , Bryol Europ.....	5, 254
var. <i>submersum</i> , Schpr....	5
var. <i>Torreyanum</i> , Sulliv. 5,	254
cymbifolium, Ehrh.....	8, 255
var. <i>laeve</i> , Warnst.....	8
<i>fimbriatum</i> , Wils.....	1, 251
<i>fimbriatum</i> , Wils.....	251
var. <i>arcticum</i> , C. Jenson. 1,	251
var. <i>robustum</i> , Warnst....	251
var. <i>tenuis</i> , Gravet.....	1
<i>fuscum</i> , Von Klinggraeff... 2,	251
var. <i>fuscescens</i> , Warnst....	2
var. <i>pallidum</i> , Warnst. 3,	252
Garberi, Lesq. & James....	7, 255
Girgensohnii, Russ.....	1, 251
var. <i>hygrophilum</i> , Warnst	2
<i>imbricatum</i> , Russ.....	8
var. <i>affine</i> , Warnst.....	8
var. <i>cristatum</i> , Warnst. 8,	255
Labradorensis, Warnst.....	253
Lindbergii, Schpr.....	4, 253

PAGE.

medium, Limpr.....	256
var. <i>laeve</i> , Russ.....	9
var. <i>pallidum</i> , Warnst....	9
var. <i>roseum</i> , Warnst....	9
Mendocinum, Sulliv. & Lesq.	6
molluscum, Bruch.....	9, 256
papillosum, Lindb.....	8, 255
var. <i>intermedium</i> , Warnst	255
var. <i>laeve</i> , Warnst.....	9
var. <i>sublaeve</i> , Limpr.....	9
Pylaei, Brid.....	7
var. <i>ramosum</i> , Warnst. 7,	255
quinquefarium, Warnst....	3, 252
<i>rubellum</i> , Wils.....	3
recurvum, Russ. & Warnst..	253
var. <i>amblyphyllum</i> , Russ	5
var. <i>mucronatum</i> , Russ. 5,	254
var. <i>parvifolium</i> , Warnst. 5,	254
var. <i>pulchrum</i> , Lindb....	5, 254
riparium, Aongstr.....	4, 253
rufescens, Bryol Europ.....	8, 255
Russowii, Warnst.....	2, 251
var. <i>Girgensohnii</i> , Russ.....	2, 251
var. <i>peccilum</i> , Warnst....	2
var. <i>rhodochroum</i> , Russ.	2
squarrosum, Pers.....	6, 254
var. <i>imbricatum</i> , Schpr. 6,	254
var. <i>semisquarrosum</i> , Russ.....	6, 254
var. <i>speciosum</i> , Russ....	6
var. <i>spectabile</i> , Russ....	6
<i>strictum</i> , Lindb.....	1
subsecundum, Nees.....	8, 255
subnitens, Russ. & Warnst..	253
var. <i>flavicomans</i> , Card. 4,	253
<i>tenellum</i> , Lesq. & James.....	9
<i>tenellum</i> von Klinggraeff...	3
var. <i>rubellum</i> , Warnst. 3,	252
var. <i>violaceum</i> , Warnst....	3
teres, Aongstr.....	6, 254
var. <i>imbricatum</i> , Warnst.	6
var. <i>squarrulosum</i> , Lesq.	6
Warnstorffii, Russ.....	3, 252
var. <i>purpurascens</i> , Russ..	252
var. <i>viride</i> , Warnst.....	252
Wulfianum, Girg.....	7
var. <i>macroclada</i> , Warnst.	7
var. <i>versicolor</i> , Warnst..	7
var. <i>viride</i> , Warnst.....	7
Sphlachneæ	98
Splachnum, Linn.....	100
ampullaceum, Linn.....	101
<i>angustatum</i> , Drumm.....	99
<i>Frelichianum</i> , Drumm.....	98
var. <i>elongata</i> , Drumm....	98
<i>heterophyllum</i> , Drumm.....	101
<i>intermedium</i> , Drumm.....	101
<i>luteum</i> , Linn.....	101

	PAGE.		PAGE.
<i>melanocaulon</i> , Schw.....	102	Timmiaceae	146
<i>mnioides</i> , Drumm.....	100	<i>Tortella</i> , C. Muell.....	50
<i>rubrum</i> , Linn.....	101	<i>Tortula brevirostris</i> , Drumm.....	50
<i>sphaericum</i> , Linn.....	101	<i>bryoides</i> , Drumm.....	49
<i>urceolatum</i> , Drumm.....	100	<i>convoluta</i> , Drumm.....	57
<i>vasculosum</i> , Linn.....	101	<i>fallax</i> , Drumm.....	53
<i>Wormskioeldii</i> , Hornem.....	100	<i>humilis</i> , Drumm.....	51
<i>Syntrichia</i> , C. Muell.....	57	<i>ruralis</i> , Drumm.....	58
<i>Syntylidium sphaeroides</i> , Drumm.....	98	<i>suberecta</i> , Drumm.....	49
<i>Tayloria</i> , Hook.....	99	<i>subulata</i> , Drumm.....	57
<i>acuminata</i> , Hornsch.....	99	<i>tortuosa</i> , Drumm.....	50
<i>serrata</i> , Bruch & Schimp.....	99	var. <i>inclinata</i> , Drumm.....	51
<i>splachnoides</i> , Hook.....	99	<i>unguiculata</i> , Hedw.....	55
<i>tenuis</i> , Schimp.....	99	<i>Trematodon</i> , Michx.....	19, 258
Tetraphidaceae	97	ambiguum, Hornsch.....	19, 258
<i>Tetraphis</i> , Hedw.....	97, 269	brevicollis, Hornsch.....	20
<i>geniculata</i> , Girgens.....	97	<i>Trichodon</i> , Schimp.....	39
<i>pellucida</i> , Hedw.....	97, 269	<i>cylindricus</i> , Schimp.....	39
<i>Tetraplodon</i> , Bruch & Schimp.....	99, 269	<i>Trichostomum</i> , Smith.....	47, 263
<i>angustatus</i> , Bruch & Schimp.....	99	<i>aciculare</i> , Drumm.....	72
<i>australis</i> , Sulliv. & Lesq.....	100	<i>fasciculare</i> , Drumm.....	75
<i>mnioides</i> , Bruch & Schimp.....	100, 269	<i>flexipes</i> , Bryol. Europ.....	263
<i>urceolatus</i> , Bruch & Schimp.....	100, 269	<i>flexisetum</i> , Limpr.....	263
<i>Thamnium</i> , Schimp.....	210	<i>lanuginosum</i> , Drumm.....	76
<i>Alleghaniense</i> , Bruch & Schimp.....	210	<i>microcarpum</i> , Drumm.....	76
<i>alopecurum</i> , Schimp.....	210	<i>patens</i> , Drumm.....	72
<i>Bigelowii</i> , (Sulliv.).....	211	<i>Sudeticum</i> , Drumm.....	74
<i>Thelia</i> , Sulliv.....	166	<i>tenuis</i> , Lesq. & James.....	49
<i>asprella</i> , Sulliv.....	167	<i>tophaceum</i> , Brid.....	47
<i>compacta</i> , Kindb.....	166	<i>Vancouvericense</i> , Kindb.....	263
<i>hirtella</i> , Sulliv.....	167	<i>Tripterocladium</i> , C. Muell.....	187
<i>hirtella</i> , Can. Musc.....	166	<i>rupestre</i> , Kindb.....	187
<i>Thuidium</i> , Schimp.....	184, 275	<i>Ulotia</i> , Mohr.....	81, 268
<i>abietinum</i> , Bruch & Schimp.....	186	<i>Americana</i> , Mitt.....	83
<i>Blandowii</i> , Bruch & Schimp.....	186	<i>Americana</i> , Can. Musc.....	83
<i>crispifolium</i> , Kindb.....	186	<i>Barclayi</i> , Mitt.....	85
<i>decipiens</i> , DeNot.....	232	<i>Bruchii</i> , Hornsch.....	82
<i>delicatulum</i> , Mitt.....	185	<i>Bruchii</i> , Can. Musc.....	82
<i>gracile</i> , Bruch & Schimp.....	184, 275	<i>camptopoda</i> , Kindb.....	85
var. <i>Lancastriense</i> , Sulliv. & Lesq.....	184	<i>connectens</i> , Kindb.....	85
<i>laxifolium</i> , (Hook).....	187	<i>crispa</i> , Brid.....	84
<i>leskeoides</i> , Kindb.....	186	<i>crispa</i> , Can. Musc.....	84
<i>lignicola</i> , Kindb.....	185	var. <i>minor</i> , Lesq.....	84
<i>minutulum</i> , Bruch & Schimp.....	184	<i>crispula</i> , Brid.....	84
<i>recognitum</i> , Lindb.....	185	<i>curvifolia</i> , Brid.....	82
<i>scitum</i> , Aust.....	184	<i>Drummondii</i> , Brid.....	81
var. <i>lonchoneuron</i> , Kindb.....	184	<i>Hutchinsiae</i> , Can. Musc.....	83
<i>Vancouveriense</i> , Kindb.....	183	<i>intermedia</i> , Schimp.....	84, 268
<i>Whippleanum</i> , Kindb.....	186	<i>Ludwigii</i> , Brid.....	81
<i>Timiella Vancouvericensis</i> , Broth.....	263	<i>maritima</i> , C. M. & Kindb.....	84
<i>Timmia</i> , Hedw.....	146, 273	<i>obtusiuscula</i> , C. M. & Kindb.....	82
<i>Austriaca</i> , Hedw.....	146	<i>phyllantha</i> , Brid.....	84
<i>megapolitana</i> , Hedw.....	146	<i>phyllantha</i> , Mitt.....	84
<i>Norvegica</i> , Zett.....	146, 273	<i>scabrida</i> , Kindb.....	83
		<i>subulata</i> , C. M. & Kindb.....	82
		<i>subulifolia</i> , C. M. & Kindb.....	82
		<i>Webera</i> , Hedw.....	111, 270
		<i>acuminata</i> , Schimp.....	111
		<i>albicans</i> , Schimp.....	117, 270

AGE.

146

50

50

49

57

53

51

58

49

57

50

51

55

258

258

20

39

39

7, 263

72

75

263

263

76

76

72

74

49

47

263

187

187

81, 268

83

83

85

82

82

85

85

84

84

84

82

81

83

84, 268

81

84

b. 82

84

84

83

82

82

11, 270

111

17, 270

PAGE.

<i>albicans</i> , var. <i>deflexa</i>	113
<i>annotina</i> , Schwaegr.	116
<i>Breidleri</i> , Jur.	117
<i>canaliculata</i> , C. M. & Kindb.	113
<i>carnea</i> , Schimp.	115
<i>Columbica</i> , Kindb.	115
<i>commutata</i> , Schimp.	117
<i>cruda</i> , Schimp.	116, 270
<i>cucullata</i> , Schimp.	113
<i>cucullata</i> , Can. Musc.	111
<i>Drummondii</i> , Lesq. & James.	116
<i>elongata</i> , Schwaegr.	111
<i>fontana</i> , Kindb.	107
<i>gracilis</i> , Can. Musc.	113
<i>Lescuriana</i> , Lesq. & James.	115
<i>longicolla</i> , Hedw.	112
<i>Ludwigii</i> , Schimp.	117
var. <i>microphylla</i> , Kindb.	117
<i>micro-apiculata</i> , C. M. & Kindb.	115
<i>microcaulon</i> , C. M. & Kindb.	114
<i>micro-denticulata</i> , C. M. & Kindb.	114
<i>nutans</i> , Hedw.	112, 270
var. <i>macrospora</i> , Kindb.	113
<i>nutans</i> , var. <i>deflexa</i> , Kindb.	113
<i>polymorpha</i> , Schimp.	111
<i>polymorphoides</i> , Kindb.	111

PAGE.

<i>pulehella</i> , Schimp.	115
<i>pulehella</i> , Can. Musc.	115
<i>pycno-decurrens</i> , C. M. & Kindb.	114
<i>Schimperii</i> , Schimp.	116
<i>sphagnicola</i> , Schimp.	113
<i>subcucullata</i> , C. M. & Kindb.	113
<i>Tozeri</i> , Schimp.	117
<i>Weisia</i> , Hedw.	14
<i>acuta</i> , Hedw.	42
<i>calcareae</i> , Drumm.	41
<i>controversa</i> , Drumm.	14
<i>convoluta</i> , C. M. & Kindb.	14
<i>crispula</i> , Hedw.	15
<i>curvirostra</i> , Drumm.	4
<i>latifolia</i> , Drumm.	43
<i>macrocarpa</i> , Drumm.	110
<i>nigrita</i> , Drumm.	108
<i>Schigeri</i> , Drumm.	41
<i>striata</i> , Drumm.	16
<i>turbinata</i> , Drumm.	98
<i>viridula</i> , Brid.	14
Weisiaeæ	12
<i>Zieria</i> , Schimp.	136
<i>demissa</i> , Schimp.	136
<i>julacea</i> , Schimp.	136
<i>Zygodon</i> , Hook & Tayl.	80
<i>viridissimus</i> , R. Br.	80